GLEANINGS IN BEE CULTURE

AN APIARY NEAR AREQUIPA, PERU.

VOL. 35 NO. 7

APRIL 1 1907

THE A. I. ROOT CO.
MEDINA — OHIO

Are you now deciding on the hives you will purchase for this season's use? If so, we ask you to consider the Danzenbaker Hive on its merits as a "Comb Honey Hive." It has stood the test. A booklet telling about it is yours for the asking. We send with it a copy of our 1907 catalog.

We are the Michigan agents for Root's goods, both wholesale and retail. We can save you time and freight expense.

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will soon be here. Are you prepared? Why not order your supplies now, and take advantage of

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illustrates and describes our complete line; tells how to raise bees and chickens successfully. . Free upon request.

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523 Monroe St., Toledo, Ohio.

APICULTEURS

des pays de langue Francaise.
Nous vous informons que

L'Apiculture Nouvelle

Revue mensuele illustree,

est tiree de:

Gleanings in Bee Culture

augmentee et completee par des collaborateurs Europeens, reconnus comme Apiculteurs eminents.

L'Abonnement d'un an est envoye franco pour tous pays de l'Union Postale, contre l'envoi par mandat poste de 7.50.

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Emile Bondonneau,

Agent General pour l'Europe et les Colonies

de A. I. ROOT CO.,

142 Faubourg Saint Denis 142 Paris (10e)

France.

L'Edition Francaise de l'A B C de l'Apiculture est egalement parue.

GLEANINGS IN BEE CULTURE

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IF BRO. DOOLITTLE will pardon me for interrupting the conversation I would suggest, in addition to the good advice given on page 393, that if Mr. Jones has bottom-boards 2 inches deep he may shove under a frame of sealed honey or a few sections.

SO TRAVEL gives bees vim and vigor for increased gathering, p. 388. I wonder, now, I wonder. How much more would a colony gather if you gave it a wagon-ride and then set it down in the same place again? and for how long would the ride be effective?

MISTLETOE is finely shown in Fig. 2, page 402; but unless specially pointed out many will fail to see it. Look directly over the words "Fig. 2," and about an inch below the top of the picture; do you see those three bunches or clusters on the trees? Well, that's mistletoe.

HEARTY THANKS, Huber, for confirmation, p. 402, of my belief that my tin-covered dead-air-spaced hive-covers are lots cooler under a hot sun than flat wooden covers. And by how much cooler they are under a hot sun, just so much warmer they are when the outside temperature is cold.

NEVER BEFORE were there so many chances to make a fortune by the investment of a small sum of money as to-day, judging by the many glowing ad's of mining and other schemes. The curious part is, that they are all so willing to divide their chances with the dear public when they might just as well keep them to themselves.

E. G. HAND heats his bee-cellar by a small electric heater, *American Bee Journal*, 191. Where electricity is cheap enough why are there not fine possibilities in this? [Electric heat is very expensive. It would cost several times more than any other source of heat, and therefore we should not regard it as feasible in a bee-cellar.—ED.]

"BEE-KEEPERS need not expect any radical change or any rapid improvement in their bees until the cause of the development of the queen is learned, and until mating is controlled (M.)."—*American Bee-keeper*. Rather a damper that, Bro M., so long as the young queens insist on all outdoors for their mating-ground; and pray tell us how knowledge of the cause of development will help us.

MR. HOUSE was highly commended at the Brantford convention for saying that "if honey were 'weeping,' if the temperature of the room were raised to 100 or 110° and kept there for three days, the honey could be redeemed," *American Bee Journal*, page 190. The *honey* will be redeemed, but honey never weeps till it first fills the air-spaces under the cappings, making the comb watery-looking. Will the whiteness of the cappings be restored? Certainly the original appearance will not be restored where there has been actual weeping; but it will be sticky-looking. Miss Wilson's plan to overcome this is to give the sections back to the bees until they lick the surface dry—perhaps 15 minutes or so—and this should be done before drying the sections.

MR. EDITOR, you have it pretty square about the commission business, p. 385. The moral of it is that commission business is all right if your man is honest, and all wrong if he isn't. Make a square sale if you can; but there are times when an honest commission man comes in mighty handy. [You are correct. There are certain times when it would be to the advantage of the commission man

as well as bee-keeper to sell on commission. When a commission man is honest, *usually* very little dissatisfaction arises. We say usually, for sometimes an honest man selling on commission is called a knave and a rascal when the facts do not sustain the charge. Time and again we have been called on to act as arbitrator, and sometimes we have decided in favor of the bee-keeper and sometimes in favor of the commission man. In one or two instances when decision was rendered for the latter we were put in the same category as the commission man, both of us being called knaves. That is what we get sometimes for endeavoring to do a favor by acting as mediator.—ED.]

CROPPING out here and there is to be seen an increasing feeling that a bee-keeper should have legal control of his territory to make the business at all stable. Much of it in last *Review*, and the editor says: "No condemnation can be too severe for the man who will crowd in upon occupied territory." Just so; and the same thing can be said of stealing; but we wouldn't think of getting along without a law against stealing. "The time may come," says he, "when these matters will be adjusted legally, but not in our day, and every one ought to do every thing possible to prevent this practice of crowding." Why not in our day just as much as in any other day, except that bee-keepers are not yet awake enough on the subject? Years ago I brought a hornet's nest about my ears by suggesting such a thing as legal control of bee-territory, and stood alone. Now I am not alone, and there are many signs of awakening. When bee-keepers and bee-journals stop frowning upon the moral wrong of crowding, and urge legislation, as in all other matters of right and wrong, it will not take long to have such legislation secured. Thanks are hereby extended to GLEANINGS for views already tending in that direction.

EDITOR A. C. Miller, *American Bee-keeper*, says, "Every State should have a law compelling bee-keepers to color to a dark shade all syrup fed to bees," which "will at once disclose sugar-syrup honey when it is offered for sale." I'll second that, Bro. M., if you will make it black (perhaps a certain proportion of lampblack) or some other distinct color that the bees could by no possibility get from natural sources. Aside from your object it might help to settle some unsettled questions. [The national pure-food law will make it very hazardous business for any one to put out sugar honey. Some chemists say they are now able to detect that product unerringly, and they are right, for we have put them to the test. At first we feared that sugar honey might get on to the market and thus cause distrust among consumers. But later years have shown there is not much danger from that source, even without the pure-food law. We know of two or three cases where bee-keepers have attempted to put out the sugar honey and palm it off as the genuine product from the fields; but they soon found it did not pay, and acknowledged as much to parties who brought the information to us first-handed. There is not the least objection to putting lampblack or any other coloring-matter in sugar syrup, providing such coloring-matters are not injurious in themselves; but the effort to get such laws from our legislators may act like a boomerang, giving the legislature and the public the impression that there is a good deal of such honey on the market. This false impression would affect our markets adversely. In the first place, we question the wisdom of such a movement; and, in the second place, we do not think there is a need for it.—ED.]

"AFTER CLIPPING, open the fingers on top of the frames, allowing the queen to crawl off quietly by herself," p. 392. Don't you fool yourself; if she is an up-to-date queen, and happens to notice that it is a beginner who has been marring her flyers, she will crawl up instead of down every time; and if you don't look out, first you know she will be on top of your hat or left shoulder. Take a leaf or something of the kind, and when she starts crawling up your hand let her crawl on the leaf, and then quickly lay the leaf on top the frames. If the wind happens to be blowing, leaf and all will go—dear knows where—and it will be fun to see the panic you're in until you find that queen again. "Been there?" Of course I've been there. But I don't let that leaf get away nowadays. [No trouble, doctor, at all, if she be held as directed, and so placed that her head will point down between the frames. When the hold is released she will hurry out of sight, as a queen-bee is naturally timid, and, if pointed right, she will go down between the frames rather than crawl up the sleeve—at least we have never had a queen crawl up the arm, much less get lost in the grass after clipping. But perhaps we do not understand the entire method you use.—ED.]

"THERE MAY BE more cool cellars than warm ones, but we can handle a cellar that is too *cool* better than one that is too warm," p. 383. Now you've struck the nail right on the head, Mr. Editor. But the last word has not been said yet. I have seldom met the problem you mention, an outside temperature of 60 or 65, for rarely is there such an outside temperature when bees are in the cellar. But I have had trouble with the outside temperature at 45; and you may count on trouble *whenever the temperature is the same inside and out*, whether that temperature be 30 or 60°. The point is, it is not the temperature so much as the impurity of the air that makes the trouble; and whenever the inside and outside temperature balance there is no ventilation of the cellar. [Elsewhere Mr. Holtermann wishes he might have some sort of clockwork arrangement that would run a fan in the chimney We have been giving the matter some thought, and are of the opinion that some sort of gearwork could be arranged in connection with a heavy weight to run a fan, possibly all night, or at most with three windings a day.

Our electric fan, run by a current from our big electric generator, and by a storage battery nights and Sundays, has been doing wonders in our bee-cellar. We understand that clockwork fans are already made and sold in Europe. We will investigate.—ED.]

PROSPECTS FOR CUBAN AND CALIFORNIA HONEY.

INDICATIONS go to show that in some parts of Cuba, at least, the season has been a failure again. This makes a series of honey failures for the Queen of the Antilles. The probabilities are, there will not be very much Cuban honey in the eastern markets, nor very much, in fact, for those in Europe.

Further indications are favorable for a good crop in Southern and Central California. We urge our California producers to get together and hold up their prices. A few scattering sales at low prices are sure to demoralize the whole market. It would seem that there is no need of doing it this year when California will have no competition in glucosed mixtures anywhere in the United States.

AN APIARY IN PERU.

THE picture on the cover page, of an apiary near Arequipa, Peru, will attract more than usual attention from its novelty. Peru is generally regarded as a very backward country, and it is, unfortunately. But it will be observed some progress is being made along agricultural lines. Alfalfa is the main standby of the bee-keeper, and it was from Peru it was introduced into California. There the farmers are not in a great hurry to get it cut, hence the bees reap a rich reward in that hot, dry, cloudless climate. Though in the tropics, alfalfa grows well because most of the farms are at high elevation in a semi-arid country. The Peruvians frequently keep the stingless bees in a domestic state, but in this case the bees are the ordinary *Apis mellifica*, and it succeeds very well at high altitudes. Not far from this apiary is the astronomical observatory of Harvard University.

TEDDY BEARS IN BEESWAX EXHIBITS.

OUR old friend Mr. Francis Danzenbaker, referring to the illustration showing the Root Co.'s exhibit at the Ohio State Fair, writes us that it was the finest he ever saw. The idea of dipping the plaster bust of a woman into beeswax and surmounting the same on top of a beeswax exhibit he considers almost too good to give away. In this connection he makes a suggestion that is very unique, as well as easy to put into execution.

It is a well-known fact that the bear, the proverbial enemy of the bee, is a good judge of honey as well as a lover of it; that he is not afraid of bee-stings. In that respect he is not unlike the bee-keeper. While his "method" of taking off a crop of honey and "disposing" of the same may be unlike that of some men, the very fact that he knows how to relieve a possibly congested honey market entitles him to no little consideration.

Well, now, Mr. Danzenbaker suggests that the teddy bears that are offered for sale anywhere would make fine subjects if dipped in hot wax for beewax exhibits. And why not? Paste the idea in your hat, and use it at the next State or county fair.

These teddy bears are made in all sizes, and can be obtained at quite a moderate price. Give half a dozen of them a dip in hot wax, and station them around the wax display. They could also help to "set off" the honey as well.

THE INDIANA FOUL-BROOD BILL LOST ON A TECHNICALITY.

THE following, from Mr. Walter S. Pouder, will explain:

> Our measure for a foul-brood inspector for Indiana was lost on a point which none of us discovered till too late. It develops that our mode of paying the inspector is not constitutional in this State. Indiana makes assessments *per value*, but never *per item*. The measure was having smooth sailing, and would have become a law, had this defect been avoided. Our only chance now appears to be in securing a strong membership for our State Association, and at the next General Assembly we may be able to secure an appropriation. The loss of the measuse will be greatly deplored by many interested friends, but none could regret it more than myself. WALTER S. POUDER.
> Indianapolis, Ind., March 16.

The effort, though resulting in an apparent failure, is by no means lost. What Missouri has done, Indiana can do. At the next session of the General Assembly the effort should be renewed.

FOUL-BROOD LAW FOR MISSOURI.

IT will be remembered that, two years ago, the legislature of Missouri passed a foul-brood bill; but the measure was vetoed by Governor Folk on the ground there was no need for it. The bee-keepers of that State, in the mean time, got busy and informed his Excellency of his mistake; so when another bill was passed he signed it, without hesitation.

The first section of the new act provides for the appointment of a State inspector of apiaries who will have jurisdiction over all cases of infectious diseases in apiaries such as foul brood, black brood, and paralysis. The second section provides that, having found a diseased apiary, the inspector will give directions to its owner for treatment. On a second examination, if the disease is not eradicated he may proceed as he sees fit.

The third section gives a legal right to enter any apiary. The fourth section relates to the annual report of the inspector to the governor. The fifth section specifies the rate of $4.00 per day and expenses for the inspector. The sixth provides for the punishment of any person who knowingly sells another a colony of diseased bees, the fine in this case not to exceed $25.00. The seventh section contains the emergency clause whereby the law was put in force as soon as signed by the Governor. If loyally supported, this law will go a long way toward eradicating foul brood from the State.

QUEER NOTIONS SOME CONSUMERS HAVE ABOUT HONEY FLAVORS.

IT has often been our experience in selling honey (and we think other dealers have had much the same) that buyers who are not familiar with the flavors of different honey usually call for white clover for the reason that the name is well known rather than because they know either its flavor or quality. The following correspondence will show how one customer has turned down a good honey simply because he did not know the flavor, and evidently mistook the flavor he wanted for something else. He writes:

Please ship one five-gallon can of white-clover honey, same as we got in September, 1906.

TAYLOR HARNESS AND LEATHER CO,
Bellaire, O., Jan. 19, 1907.

Being out of white-clover honey at that time, we sent this order to one of our dealers, knowing that he was very particular about what he supplies on his own orders or any orders we might send him. February 8 we received the following letter:

We received the white-clover honey (?), and would say it is not satisfactory, as it is either adulterated or something else is the matter with it. We melted a little of it down, and found it very thin with very little honey taste. We will return the same tomorrow, as we do not care for it at any price. We expected to get a pure article from you, and are very much disappointed.

TAYLOR HARNESS AND LEATHER CO.
Bellaire, O., Feb. 7.

To this we answered as follows:

We are very much surprised to get your report of February 7. We were entirely out of clover honey when your order came in, and we sent this to one of our most reliable dealers, and there is no question that is absolutely pure and of good quality, for we have just as much confidence in this dealer as in our own men at Medina. We hope you have not returned it before the receipt of this. If you have, nothing remains to be done. If you have not, please wait until you hear from our dealer who shipped you the honey.
Medina, O., Feb. 8, 1907. THE A. I. ROOT CO.

We wrote our dealer as follows:

Enclosed we hand you a letter just received from the Taylor Harness and Leather Co., with copy of our reply. If agreeable you may take the matter up with these parties direct and oblige

THE A. I. ROOT CO.

The dealer replied as follows, under date of Feb. 11:

Taylor Harness and Leather Co.:—Yours of the 7th, regarding the two cans of honey shipped you January 26th, has been referred to me. The honey in question is white clover, absolutely pure, and well ripened and best quality. I will inclose a signed certificate as to purity, which will apply to this shipment. This house has never handled adulterated goods, and I am able to stand by this assertion.

This honey was produced by a well-known beekeeper of Michigan. I have handled his crop for a number of years, and this is the first time that his honey has not given perfect satisfaction. Your letter does not explain your grounds for suspecting that it is not genuine. I should be very glad to know why you have thus decided. In filling any orders for The A. I. Root Co. we have always considered it very important to send the very finest goods, and that is exactly what we did in this instance. I should be very glad to hear further from you about the matter; but do not return the goods until you get shipping directions from The A. I. Root Co.

Our purchaser finally returned the honey to us, and we sent him another lot. As soon as the returned goods came in we submitted samples to several well-known bottlers of honey, without any information as to why we were making the inquiry, and the following reports have been received:

Your sample of honey came to hand. I have examined and tasted it very carefully. While I hardly thought it necessary to give it a laboratory test, as it seems such an exceedingly fine sample, its specific gravity shows that it was thoroughly ripened before extracting, and its flavor indicates that it is largely from *white clover*, with possibly a trace of alsike clover and a slight tinge of sweet clover. I should consider it *one of the very best samples of honey*, as I place this grade of honey above honey from any other source, in my work. I should be glad to give you any further opinion you may desire upon it.
Philadelphia, Pa., March 7. W. A. SELSER.

In reply to your favor of the 5th we will say that we received the sample of honey some days ago, and that, before we had received your letter, we had pronounced the sample *very fine honey*.
Middlebury, Vt., March 5. J. E. CRANE & SON.

Your sample of honey is at hand. As to its source I am unable to identify it, although it resembles some that I have on hand that was produced in Michigan, and is supposed to be white clover. As to *body, color, and taste, it is excellent*, and is the kind that I like to get for my bottle trade for the fancy grocery trade.
Indianapolis, Ind., Mar. 8. WALTER S. POUDER.

We submit the correspondence, not because it has any particular value, but to show our experience in trying to satisfy a customer that we had sent him some good honey; and as these experiences are quite common with us, and probably with other dealers, we think it may be of some interest to dealers at least.

Under date of Feb. 11 the Bellaire house wrote us again:

We have not reshipped honey yet, as on second thought we concluded to wait until we heard from you. The honey is not good, I don't care how reliable the dealer is. We had a man examine it who was in the honey business for eight years. We do not want it at any price, as we might as well use sugar or molasses. If you haven't white clover, send some of your own alfalfa.

TAYLOR HARNESS AND LEATHER CO.

THE NEW FUTURE FOR HONEY; HOW SOME OF THE CHEAP SYRUPS, FORMERLY COMPETITORS, HAVE BEEN ELIMINATED.

DURING the closing hours of the last Congress the full appropriation for the enforcement of the national pure-food law was passed, the Senate refusing to endorse the Tawney rider that would, to a very great extent, defeat the very object of the new pure-food law. This measure will in time work a revolution in the honey trade, as it will be very hazardous for any person to offer spurious honey for sale in any part of this country.

Bee-keepers can aid Uncle Sam in the execution of this just law by furnishing the officers with information as to where the law is being violated. There are enough readers of GLEANINGS and other bee papers to make it quite uncomfortable for all adulterators, no matter where they have their headquarters, as the law covers the whole United States. We may now regard Prof. Wiley as a benefactor, because his department will prosecute our enemies *free of charge*.

It will take a little time to get the law into working order; but just as soon as it is, bee-keepers may expect better prices for their produce, and in any event there should not be any idea of a return to low prices, no matter how large the crop may be.

According to rulings of the Department of Agriculture, a good deal of syrup which was formerly sold quite freely will be entirely barred in future, and legitimate substitutes for honey will be scarce and rather high in price for some time to come. The bee-keepers can, therefore, stand out for a fair price for their product without any fear, and it is to be hoped none will be so weak-kneed as to undersell those who are attempting to hold up honey prices. This is not the time to talk low prices, and there is no need to. Regarding the outlook, the *American Grocer* of March 6 has this to say:

> Further proof that retailers are more careful as to quality is had in the heavy sales of high-class goods for next season's deliveries. The makers of absolutely pure jams, jellies, catsup, canned beans, peas, tomatoes, corn, spinach, apples, and other vegetables and fruits, are overwhelmed with orders. One firm, noted for the high quality of its products, has been unable to take an order from new customers in several years, and yet it is one of the largest of its kind in the country.
>
> The retailer's trade in preserved foods can be increased by judicious local advertising, the scope of which should include the compilation and circulation of dainty little brochures, folders, and circulars showing the possibilities of different sorts of canned fruits and vegetables. Furnish well-selected recipes for their use, prefaced by a brief description of where the article is grown and the care taken in preparing it for market.

The foregoing applies equally well to honey.

The same authority also states:

> The plea that the poor people want cheap stuff is humbug from start to finish. The palate of the wage-earner is just as sensitive (generally more so) than that of the rich, and the desire for self-gratification is stronger with the poor than those rolling in wealth.

Bee-keepers ought to feel encouraged by these words, and make up their minds to furnish a good article to meet the price. One thing seems certain, good honey will command a remunerative price soon.

HOW THE MASK WAS REMOVED; THE SERVICE PROF. WILEY HAS RENDERED BEE-KEEPERS.

IT is really amusing how the dealers in syrups and general food stuffs are hustling to comply with the national pure-food law. A subscriber tells how he was buying syrup to feed his bees, from a syrup concern in the South. It was branded "pure cane" up till Jan. 1 of this year. On another shipment of the same goods, after that date, the barrel came branded "pure cane and pure corn syrup." Our correspondent immediately raised a protest, as he says, as he was not buying corn syrup and did not want the stuff around. It appears, though, he had been buying the mixture, supposing it to be pure cane. The syrup-dealer, on receipt of his reply, simply wrote him that, since Jan. 1, they were *obliged* to "brand our barrels with what they contain." Then they add, "In future we will quote our molasses, this particular brand, —— cane and corn syrup compound." Our bee-keeping friend for the first time had his eyes opened that he was buying glucose and paying the price for "pure cane" syrup; and the result is, he wants no more of those goods.

Just the other day our grocer told us how the grocery trade was hastening to comply with the provisions of the national law. "Why," said he, "the ordinary oyster crackers have been known to the trade as farina crackers, and we have always ordered them by that name; but since the new food law went into effect that name can not be used any more on those goods because farina forms no part of the cracker. And that is the way it is going," said he. "Every thing nowadays must be labeled just what it is." In general he expressed himself as being very much pleased with the operation of the law, "because," he said, "we know just what we are getting. Before, we *thought* we knew, but we didn't."

No more can injurious preservatives be put in canned goods; no more can glucose be sold as pure cane or New Orleans molasses; no more can glucose be sold for honey. We can scarcely estimate the importance of all this from the standpoint of health. The presiding genius who had very much to do with bringing this about is Prof. H. W. Wiley, Chief Chemist of the Department of Agriculture, and yet there are many who are throwing mud at him. He is loved for the enemies he has made among the erstwhile makers of bogus food stuffs.

PREPARED AND PREDIGESTED FOODS; HONEY AS A NATURAL AND SAFE FOOD.

THERE is a great demand just now for accurate information regarding the physiological effect of different kinds of food on the human system, and consumers generally are only beginning to learn the tremendous importance of the subject from every point of view. To a very great extent people have found out they have been misled, and are now looking for facts which can be relied on. Probably the leading feature of the new century will be the great study of the prevention of diseases in mankind by sanitary measures. Already public opinion has greatly changed, and as yet we have made only a beginning. We do not know just where this agitation will lead us, but we realize it will make for better things.

One thing we feel sure of, natural foods such as honey are likely to come to the top

of the heap, for it is already clear that human nature abhors all "made" or artificial substitutes for real food. There is also a recoil against the excessive use of particular foods which of themselves are all right in moderation—for example, sugar, which the American people eat to excess.

Proprietary or prepared foods would seem to have a hard time of it under the new dispensation, and some we thought well of will have to go because they have no merit that would entitle them to live. In this connection we particularly refer to the foods popularly known as "baby foods," and often spoken of as being "predigested."

Probably honey stands as good a chance as any thing to gain by the new agitation, because, as a food for mankind, particularly for children, it will bear the strictest kind of criticism. It supplies the natural craving in young people for sweets in a way nothing else can do, and it can be shown that much of the confectionery hitherto given to children was simply slow-acting poison. Paraffine, it has been proved, was absolutely deleterious, and much of it has been used in candies. Gelatine is also bad, as likely to carry disease germs, being produced under filthy conditions. Beeswax, on the other hand, is perfectly safe. Perhaps the best thing bee-keepers can do is to let the mothers know that no sweet can equal honey for children. We can rest assured the next generation will entertain a very high opinion of honey. It can, for example, be pointed out that, while honey is a highly nutritious article of food, it leaves no residue to distress the kidneys, spleen, or bowels; and practically all of it is digested and used up by the body. It is also free from bacteria of a pernicious type, and it is, in fact, an antiseptic, so that it carries no contagion. Physiologically speaking, then, honey is practically a perfect food.

AMERICAN AND EUROPEAN FOUL BROOD; A QUESTION OF FACTS AND NAMES.

IN the *British Bee Journal* for Jan. 31 appeared an editorial taking issue with Dr. White and Dr. Phillips, of the Department of Agriculture, on the subject of brood disease. The editor, Mr. Cowan, has given this subject of foul brood, from the standpoint of a microscopist, considerable time and study. His statement, therefore, will command more than ordinary attention, and we are pleased to place it before our readers.

We are indebted to the Department of Agriculture in Washington for the receipt of three pamphlets which have just been issued by the Bureau of Entomology, and which relate to brood diseases of bees. In view of the widespread distribution of infectious brood diseases among bees in the United States, and the importance of the industry in that country, the government has printed these pamphlets so that beekeepers might learn to distinguish the diseases as they appear. Notwithstanding that there is legislation in many of the States, and foul-brood inspectors are visiting apiaries, destroying and curing colonies, Mr. E. R. Root, in an editorial in GLEANINGS for December 15, 1906, says: "There is no use trying to disguise the fact that bee-diseases in many parts have been getting the upper hand of us, and now the authorities at Washington are giving us practical aid."

The first pamphlet relates to "The Bacteria of the Apiary, with special reference to Bee-diseases," by Dr. G. F. White, expert in animal bacteriology in the Biochemic Division of the Bureau of Animal Industry. This paper was prepared by Dr. White as a thesis in part fulfillment of the requirements for the degree of doctor of philosophy at Cornell University in June, 1905. The pamphlet is a purely technical one, and describes the work done in the laboratory by Dr. White, and the conclusions he comes to. So many investigators have found different bacteria in bees, and have tried to ascribe foul brood to some other microbe than *Bacillus alvei*, that it is not astonishing to find that Dr. White has added a new one to the list. There are two diseases in the United States that have hitherto been known as foul brood and black brood. Until now it has been supposed that foul brood was the same in all countries where it has been investigated, and that *Bacillus alvei* was always present as a cause or result of the disease; but now Dr. White tells us that this microbe is not found in American foul brood, but is present in every case of black brood, and that the microbe of the former is a new one, which he has named *Bacillus larvæ*. Therefore to distinguish between them he calls black brood European foul brood.

The next pamphlet, of five pages, is entitled "The Brood Diseases of Bees," by Dr. E. F. Phillips, expert-in-charge of apiculture during the absence of Mr. Benton. Dr. Phillips says there are two recognized forms of disease of the brood, designated respectively European and American foul brood, which are particularly virulent. He then describes the symptoms and characteristics of each disease. That there are two forms of foul brood, a mild and a virulent one, has long been admitted; but we are certainly not yet prepared to admit that these differ from American foul brood upon the slender evidence adduced. The symptoms and characteristics of American foul brood as described by Dr. Phillips correspond with those of foul brood as we have it here, and such as we found in the United States when we first visited the apiaries at Medina in 1887. We have since that time had the opportunity of seeing specimens of foul brood in the States and Canada, and in every case the symptoms were similar. Slight variations occur, but there was the distinctive ropiness and unpleasant odor which can be compared to bad glue. We have also seen many specimens from different parts of Europe and Africa, always with the same characteristics.

Our first acquaintance with black brood, or "New York bee-disease," as it was at that time called, was made some years ago in California. This was sent from New York State by Mr. West, State bee inspector, and on examining it we at once saw that it differed from what we called foul brood; for, although the outward appearance of the comb was similar, the distinctive ropiness and odor were absent. Notwithstanding that our experience with foul brood was pretty extensive, and dated back more than thirty-five years, this was the first time we had come in contact with black brood. It was entirely unknown to us except from descriptions in the journals, and not a single sample had been sent to the *British Bee Journal* office for diagnosis. Last year, however, we began receiving from time to time specimens of dead brood differing in a marked degree from any we had previously seen in this country, and which corresponded in nearly every particular with the description given of black brood, and they at once reminded us of that we saw in California. Black brood is of quite recent occurrence here, and we naturally hesitate to accept the statement defining it as "European foul brood," or the assertion of Dr. White that it is caused by *Bacillus alvei*. To say the least, it is quite possible that Dr. White has made a mistake, just as others have done, and has cultivated one of the numerous saprophytic bacteria found in bees. It appears to us that the most important test has been omitted; and until that has been made successfully our judgment must be suspended. The test we allude to is to prove that the disease can be reproduced in healthy brood from a pure culture of Dr. White's *Bacillus larvæ* showing the characteristic symptoms of foul brood—that is, the ropiness and odor. We know that this was done by Mr. Cheshire with *Bacillus alvei*, but we can not see that Dr. White has hitherto been able to reproduce the disease with his microbe. Until this has been done the investigations and the conclusions arrived at are of very little value so far as solving the question is concerned.

This we referred to Dr. E. F. Phillips, of the Department of Agriculture, Washington, D,

C., asking him if he would like to reply to it. This he does in the following statement.

Dear Mr. Root:—I notice that the writer of the editorial in question says that "European foul brood," or "black brood," is of recent occurrence in England. I should hesitate very much in taking exception to a bee-keeper of the high standing of Mr. Thomas Wm. Cowan; but in Cheshire's portion of the paper on "Foul Brood" in the *Journal of the Royal Microscopical Society*, 1885, part of the description fits "black brood" much better than it does the ropy type of disease which we call "American" foul brood. Cheyne, who really did the work, describes the one sample used by him as watery, which does not apply very well to the ropy type of the malady.

Mr. Cowan says, "There are two forms of foul brood, a mild and a virulent one, . . ." but we are not told in any of the scientific literature with which I am familiar in which one of these we are to look for *Bacillus alvei*, nor do I know of any ground for the belief that the two diseases are but varieties of "foul brood caused by one specific bacillus.

Attention is also drawn to the fact that American foul brood is of much more general occurrence than European foul brood, a fact which no person will be inclined to call in question.

The possibility that Dr. White has cultivated a non-pathogenic saprophytic bacterium under the supposition that it is the pathogenic bacillus of American foul brood is suggested; but since Dr. White is the first and only bacteriologist who has attempted to investigate the non-pathogenic micro-organisms of the apiary, this may well be considered a criticism of small weight. Other investigators have been satisfied to leave the normal invisible flora of the apiary unknown, and we are justified in the belief that on this very rock have they been shipwrecked. At any rate, Dr. White expresses the belief that the results of Howard, Mackenzie, and Harrison are false because they did no work in non-pathogenic forms.

According to Dr. White, *Bacillus larvæ* is found universally in diseased larvæ of American foul brood, and in not a single instance has he found it in the numerous normal combs which he has examined, nor has it been found on healthy adult bees or in the intestine of normal adults. He assures us that it is universally present in every case of American foul brood examined by him since he first used the media made of bee larvæ, and never present in any of the normal material examined. This to a bacteriologist or even to a layman is rather good evidence of the pathogenic nature of the bacillus in question.

The principal criticism in Mr. Cowan's editorial, I shall quote: "It appears to us that the most important test has been omitted; and until that has been made successfully our judgment must be suspended. The test we allude to is to prove that the disease can be reproduced in healthy brood from a pure culture of Dr. White's *Bacillus larvæ*." This test has never been made by Dr. White, and the desirability of such a test is, of course, evident. The criticism is, however, somewhat misleading, for the reader might be led to the belief that such a test is usually applied in the study of micro-organisms supposed to be pathogenic. I believe I am safe in saying that this test can not be applied in many cases, nor is it considered necessary in all cases by bacteriologists. The uniform occurrence of a specific micro-organism in disease, and its uniform absence in normal conditions, while not as absolute as the Koch test referred to, is proof of the greatest value. *Bacillus larvæ* grows only in a special medium, and there are many difficulties met with in the preparation of the cultures. A careful reading of Dr. White's paper will show that he specifies merely the fact that *Bacillus larvæ* is uniformly present, and lays no claim to having made the test called for by Mr. Cowan. The author further says, "We know that this was done by Mr. Cheshire with *Bacillus alvei*," but we are not told what the effect on the brood was, it being assumed by Mr. Cheshire all through his work that there is but one disease of the brood in the class which he calls "foul brood." I, therefore, can not agree in the belief that "until this has been done the investigations and the conclusions arrived at are of very little value so far as solving the question is concerned."

While I have undertaken to defend Dr. White's work in the face of Mr. Cowan's criticism, I do not wish to be understood as believing that this whole subject is now complete. On the contrary, I can not but believe that the field is just opening up, and much more bacteriological work must be done before we are even on a good working basis. We now have a good start, and I hope the work may be continued at no late date. E. F. PHILLIPS.

Washington, D. C., Feb. 21, 1907.

Mr. Abram Titoff, for many years a bee-keeper in Russia, came to America to study bee-keeping. He spent about a year and a half at Medina, and during that time he so thoroughly acquired the English language (he could not speak a word of it when he came here) that he delivered an offhand address before the National Bee-keepers' Association in St. Louis in 1904. While Mr. Titoff was here he had an opportunity to see samples of both black and foul brood; and during his residence in California he doubtless has made the matter a further study. He raises a decided protest against calling black and foul brood, American and European foul brood, in the following language:

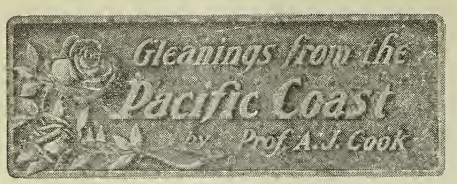
It seems that some Americans are under a wrong impression concerning foul brood in Europe. Both kinds—the old-fashioned (American) foul brood, and the black brood (European) are found there, where they have the same peculiarity and effects that they do in this country. I have seen hundreds of cases of both kinds of the disease in Russia. The black brood (European?) is not very prevalent in Russia; but foul brood (American as you call it) is quite common, and does much damage to the apiaries.

Neither disease is peculiar to America; and although American bee-keepers might in time become accustomed to the inexact terms, "European" and "American," readily distinguishing between them, these terms would always be confusing to a European. To distinguish clearly between these two types of disease I would suggest the use of more scientific terms—such as those employed in Russia. There the black brood is spoken of as the "benign" foul brood. What is here known as the "American" is called the "malign" foul brood. I do not know what adjectives could be better adopted here in this country; but I am thoroughly convinced that it is a mistake to call one kind "European" and the other "American."

Los Angeles, Cal., Feb. 12. ABRAM TITOFF.

To correct a misapprehension on the part of Mr. Titoff we may state that neither Dr. Phillips nor Dr. White has ever claimed that American foul brood was peculiar only to America, and the European to Europe. On the contrary, their published statements go to show that both kinds are found in both continents; but they gave the name "European" to black brood because Cheyne and Cheshire, both Europeans, were the first to discover the bacillus that caused it. They applied the name "American" to foul brood in this country because, up until within a few years, it was the only brood disease of a contagious character known here, and because an American first discovered its bacillus.

The question, after all, simmers itself down to this: *If* there are two distinct brood diseases, it is important that legislation that applies to foul brood may apply to both diseases here under consideration. If both diseases were from the same microscopic form of life the difficulty might be overcome by calling one "benign" and the other "malign" foul brood. But Dr. White declares, and external evidence seems to bear out the assertion, that the two diseases are entirely distinct. If this is true it is not a case like varioloid and smallpox, nor even a mild and virulent form of foul brood both from the same microbe, but two separate diseases each originating from a distinct germ.



RAINS IN CALIFORNIA.

As is well known, Southern California is so well in the north-trade-wind belt that it is likely to get all too little rain. In the winter months we swing to the north of this, and so get our scant rains. In the region of Claremont we get, on the average, a little over fifteen inches of rain. If this comes scattered along through the season we are sure to have very prosperous years. This season we have had already more than our average, and yet we are still to have our best month, that of March, when, as the records show, we get our greatest rainfall. The sage and other honey-plants are pushing forward very fast; and unless the season is very damp and cold we may almost surely count on a generous honey-flow. I think that, in all the thirteen years I have been in this section, we have never had a season that promised so much for the bee-keeper as does the present one. We may expect a great harvest along all agricultural lines the coming fall and summer.

CALIFORNIA FOR LUNG TROUBLES.

I have so many inquiries regarding the salubrity of this section that I feel sure the facts in the matter will be of much interest to the readers of GLEANINGS. There is no question that the pure dry atmosphere of Southern California, together with the equable temperature, are greatly preventive and as surely curative of many pulmonary troubles. I know of many who came here with serious troubles, who to-day are among our strongest and most valuable citizens. They are not now "one-lungers," whatever they may have been when they first came. From what I have observed since I came here thirteen years ago I feel sure that incipient tuberculosis, with reasonable care, can not stand this climate, but will in almost every case succumb to its sanitary influences. The same is true of asthmatic troubles. It must be said, however, that one who comes here with consumption must not think to return after the cure is wrought. In rare cases that may do, but generally it is followed with a relapse, and with each recurring attack the cure is less rapid and certain. In cases of asthma the dry air further from the coast is found more helpful. I have known persons who could not stop at all with any comfort at Long Beach, but who were entirely comfortable at Pasadena, though the latter is so near by. Others could not stay at Pasadena, while they were free from trouble at Redlands or Riverside; and one man who could not stand Riverside was all right at Coachella.

The past two weeks, right in the heart of winter, have been like the best of May and June in my old Michigan home. This is a glorious climate, and one feels to thank God every day of the year for such a home and such a climate. The world knows none better.

GLANDS AND SECRETION IN INSECTS.

Few of us who have never given the subject of secretion special study or attention realize its importance in the animal economy. We appreciate muscular activity, and so muscles command respectful consideration; we know the great importance of nerves, and so the word *nervous* begets appreciative consideration; we know the immense importance of good air, and so lungs and respiration always interest us; such expressions as "blood tells," and "the heart as the seat of life," show that we know well the importance of circulation among life's processes. Do we all as fully realize the great part that secretion plays in the animal economy? Do we realize that every stage in the digestive process not only is attended with glandular action, but depends wholly upon it? Milk, which is so very important as a food product, and which is the nearest approach to a perfect food of any single substance known, unless it be the food given to larval bees, is exclusively a secretion.

Glands, what? Glands, the agents of all secretion, are simply membranes with blood on one side and cells on the other. These cells have the power of selecting from the blood the elements of the secretion that they are to form, and to manufacture the secretion from them. The liver is the largest of all the glands, and, as a gland, has two very important functions. It secretes the bile and the liver sugar. The pancreas and the stomach are great glands which play a very important part in digestion.

Among insects we have in the silk-moth larva, or caterpillar, an example of an animal where glands are enormously developed. The silk-glands are really modified salivary glands, which are developed for a specific purpose, and which are, perhaps, the best example of excessive development for a special end or purpose to be found among animals.

GLANDS AMONG BEES.

We should expect to find among animals with such varied functions as are possessed by our honey-bees exceedingly interesting examples of glands and of the formation of secretions. Nor are we disappointed. Honey itself, as we know assuredly, is digested nectar, and the digestion is accomplished through the action of the secretion from the large racemose glands of the head (upper head glands) and of the thorax, which empty their product through a common duct which ends at the base of the tongue. Thus, as the nectar is quaffed from the flowers it is

mixed with this abundant secretion and converted into honey. The pollen, the proteid food of bees, is also acted on by another copious secretion, that from the lower head glands, and is converted into the "chyme," already referred to as a very perfect food. This forms the basis, doubtless, of the royal jelly; and if this is what is fed to the queen it must be a very admirable food, else it would not give such vigor as the queen possesses, for she lays nearly twice her own weight of eggs each day when at her best. The wax is also the product of glandular action, from the glands along the under side of the abdomen. The work of these glands, when the bees need much wax, is something tremendous. At such times the worker bees eat much and exercise little, and the full energy is given to wax-formation, and the results are as just mentioned. Nor is this all; for the poison of the bees which they use so effectively when they sting is also a secretion, which is formed by large racemose glands situated close to the poison-sac, near the tip of the abdomen. I believe that we are safe in claiming for our bees three phases of development that are unsurpassed by any other animal, even not excluding our own species—one the varied secretions, and exceeding glandular development, just pointed out; another the varied physiological development, for I know no other animal that does so much as do bees; and the third, the wondrous structural development without which the high functional performance would be quite impossible.

Some of the honey-dealers can not see any chance for a rise in the price of honey through the operation of the pure-food law. Are they looking for a chance to make a little extra profit themselves?

At the time this is written, the report comes that a pure-food law, strengthening the national pure-food law, has just passed the Colorado legislature, and is only awaiting the governor's signature. Colorado legislators are all right. Remember that Colorado already has a special pure-honey law.

Bee-keepers ought to have a great deal of sympathy with other industries that are attacked in the newspapers, since we have seen for ourselves how cruelly unjust and untruthful such things may be. It is easy for the careful and unprejudiced reader to see that many of these newspaper reports are simply sensational lies, or, at the best, badly exaggerated, and it behooves us to withhold judgment in many matters until we have information more reliable than mere newspaper report.

Some people have curious ideas as to the amount of honey that plants yield. "The Jay" tells us of those who thought his crops of honey came from his geranium-bed. Our lawn is bordered by some very fine roses, from which we call our place "Roselawn," and on several occasions people have shown a serious belief that these roses had a great deal to do with the crops of honey we secure.

THE SEASON.

We have had a very mild winter here, almost no cold weather at all; 18 above zero was the coldest I noticed, and most of the time the bees were flying every three or four days. As a result of this mild weather the bees are wintering very well; and if they do not use up their honey in brood-rearing they are likely to be in very good shape for an early harvest. Every thing is further advanced than usual at this season. Some of the soft maples were in bloom Feb. 15th, and wild mustard the 24th. Peaches, apricots, and almonds have been reported in bloom in sheltered places about the same time, and the bees will soon be humming on all kinds of early bloom.

HIVE-STANDS AND TOADS.

Dr. Miller's plan of making concrete prisms to support bottom-boards, keeping them up off the damp ground, is doubtless good and will add much to their life by keeping them from rotting. One objection I would have to any such arrangement is that it would make a good shelter for toads. In some places here, toads are very plentiful and do a great deal of damage to the bee-keeper because of the number of bees they eat. On account of this, and for some other reasons, I want a hive-stand which, while keeping the hive itself a few inches above the ground, is perfectly tight all around. Even with these, and with the ground kept clean between the hives, toads come into the apiary in such numbers in the evening that in some apiaries I find that these hive-stands must be so high that toads can not reach the alighting-board. I have been wondering if it would not pay me to make a toad-tight fence around such apiaries.

AN ENEMY TO BEE-KEEPING.

I took a walk a few days ago to look up some of the sources of honey supply in the neighborhood. As I walked along the banks of the great irrigating-ditches, or down in their beds, dry at this season, I noticed some places where the sweet clover grew luxuriantly along the banks of the large canals and the laterals that ran from them, while in other places the ground was bare of every thing except weeds and the shrubbery of the desert. The reason for the difference was

plain to see. Where the sweet clover grew, the stock was fenced off; but wherever cows, whether in pasture or running loose on highway or range, had access to the banks of the ditches, the sweet clover was eaten down to the roots and never had a chance to grow sufficiently to live through the first winter. When I considered how large a proportion of our honey crop came from these thin lines of sweet clover along the irrigating-ditches, and thought how many miles of ditch there were where it would thrive if it only had a chance, I was more than ready to concede that one of the greatest obstacles to successful bee-keeping in this country is the cow.

HONEY IN BUTTER.

Like Dr. Miller I have wondered why W. K. Morrison should want his mixture of honey and butter frozen. If the mixture was not stiff enough to suit him, that point could be easily regulated to suit the season by using honey more or less candied. Whether so large a part of honey as fifty per cent would suit many would be a point that could be determined only by experiment. But an old, well-tried, and perfectly practical method of combining honey with butter is to add a somewhat smaller quantity at the time of making. This is said to be quite common in Europe, especially in Switzerland. We have used the plan in our family for several years, and like it very much. Mrs. Green adds about an ounce to four or five pounds of butter as it is being worked. An effect you might not look for is that it permits the removal of a much larger percentage of buttermilk, which in itself improves the flavor and keeping quality of the butter. Add to this the aroma, flavor, and preservative qualities of the honey, and you have butter that not only tastes much better but also keeps better than that to which honey has not been added —at least that is our opinion; and, judging from the fact that others are very glad to get any butter we may have to spare, at the highest retail price, it is at least good butter. Of course, adding honey will not make good butter out of poor, but it seems to me that it would improve it in any case. I have been intending for a long time to mention this in GLEANINGS, but other things got ahead of it. I am much obliged to our new editor for bringing it up. It is a good thing. Try it, all you butter-makers.

HIVE-TOOLS.

A couple of hive-tools are illustrated in GLEANINGS for March 1. In going about the country inspecting bees I have come across a great variety of tools of this description, some of which are fearfully and wonderfully made, evincing a great deal of thought and labor on the part of the inventor. I have never yet seen one of these complicated contrivances that I would be content to use myself in regular work. The practical bee-keeper can not afford to carry a kit of tools with him, but must select something that is not burdensome to carry, and will combine as many good points as possible.

My favorite tool, and the only one I use among my own hives, is made by taking a butcher-knife like that illustrated on page 315, and breaking the point square off at the widest part of the blade, just where the notch begins in the illustration. This end is then ground to a short bevel on one side. For prying apart hives, supers, or frames, for scraping hives, bottom-boards, or the tops of frames, and for general lightness and convenience, I know of nothing equal to it. I have found the cheaper butcher-knives, those selling at from ten to twenty cents apiece, really more satisfactory than higher-priced ones, as they are not so likely to break when used for prying. The butcher-knife tool is hardly stiff or strong enough, though, to handle Hoffman frames, taking them as they average here; so in my work as bee inspector I always carried as my only tool one made from one of the thin leaves of a broken buggy-spring. Grind the thin end down to a chisel edge straight across. Grind one of the edges to a knife edge for about three inches back from the end you have sharpened; round the blunt end off nicely, and you have a tool that can be comfortably carried in the hip pocket, and that can be depended on to pry apart any thing about a bee-hive, and without breaking as many frames as will be done by any of those tools which are intended to hook under the end of the top-bar. The hive-tools made of cast metal, of which several have been put on the market, with their thick blunt edges, are an abomination when it comes to prying apart hives and supers.

THIN OR EXTRA THIN FULL SHEETS OF FOUNDATION.

I am afraid the editor is giving bad advice when he says that a full sheet of foundation should be "thin" and not "extra thin," page 307. I believe it is against the interests of bee-keepers to use any other than the thinnest foundation possible, especially when in full sheets. That tough septum which is found in a great deal of comb honey made on thick foundation has helped along wonderfully the belief that comb honey is an artificial product, which belief, most of us will agree, is one of the worst things that ever happened to our industry. If "extra thin" foundation can not be used when the section is entirely filled, then we had better let that plan alone. I use "extra thin" foundation in sheets that come pretty near filling the entire section. Sections are about 4 inches inside, and the sheet of foundation that I prefer to use in them is $3\frac{7}{8}$ square. After being fastened, the lower edge of the foundation is about $\frac{1}{4}$ inch above the bottom of the inside of the section. With this space I have had no trouble with foundation buckling, and there will be scarcely over one section in 500 in which the comb will not be well attached to all four sides. With a space much less than this, there may be some trouble from buckling. The foun-

dation must be carefully put in so that it swings clear from the sides. If not put in square, one corner of the sheet will be crowded against one side, which may make a crooked comb. While it takes careful work to put these large sheets of foundation in properly, I think it is much less work than to use a smaller sheet with bottom starter, while it gives almost as good results.

It is unquestionable that some method must be used that will secure combs well attached to the section all around if we are to have honey that will ship safely. I have never seen any comb honey built from starters only, or even with large sheets, that did not nearly fill the section, that did not have a considerable number of sections that were really unfit to ship, and that would break down in shipping. This not only disgusts the honey-dealer but compels him to ask a larger profit, thus reducing consumption, or else compels the honey-producer to take less for his product. Claims and complaints are made to the railroads when honey is broken in shipment, and, whether they pay these claims or not, they give them a good excuse for maintaining high freight rates on honey, the burden of which must fall on the producer.

CONVENTION REPORTS.

It will not be long before we have a new departure in reporting convention proceedings of value. Where hive manipulations or other operations of a somewhat intricate nature are described, the one preparing the address should have the power to take photographs (at cost) of these operations, and hand copies in at the convention.

AN INTERNATIONAL CONVENTION.

Could there not be in the United States a truly international bee-keepers' convention? Such a meeting should be of profit to the bee-keeping world, and with it there should be an international exposition of honey and apiarian appliances and apiarian views, and the vegetation from which the nectar is gathered. Surely our various governments would help such an undertaking.

CONVENTION PROGRAM.

The place for a convention should be selected at as early a date as convenient, then those interested can concentrate their energies on working up an interest. Next the invitations to those who shall take part in the proceedings should go out early so these can put their best efforts in preparing material for the subject in hand. On every hand there is too little effort to make a convention a success. My observations go to show that, where reason is used in selecting the time and place for a convention, if failure there be, it is generally due to a lack of thorough and united work to create an interest.

SCANT AND IMPROPER STORES.

At the above convention a discussion took place which went to show that, if carefully done, the feeding of sugar syrup during winter may do no harm; and when dysentery in winter quarters is the result of improper stores, or if there is a shortage of stores, the feeding of sugar syrup may do much good. O. L. Hershiser has, during the past winter, fed over the cluster in inverted jars, the mouth being covered with a thin cloth, 25 lbs. of sugar to 10 lbs. of water, with 2 lbs. of honey added, and a teaspoonful of cream of tartar.

Mr. Alex. Taylor gave an instance where a man fed in saucers shoved under the cluster. The man fed the bees regularly, and the bees came out in first-class condition. The writer related his experience in feeding one colony two parts of sugar to one of water. The stock had dysentery from improper stores. The result was satisfactory so far as he could judge. Since the convention, some more have been fed, apparently stopping the disease. The great difficulty, however, is to keep the stores warm. The convention appeared to consider that ideal conditions could be obtained by feeding some sugar syrup in the fall. This the bees would use first when in winter quarters and then turn to honey.

LOCALITY.

In the *British Bee Journal* report of the British Bee-keepers' Association conversazione, Mr. Cowan (the chairman) stated that the Italian bee had not proved as satisfactory as the English (black) bee. Objection was, thirty years' experience had taught him that English bees were much better suited to their own climate than the others, which began work too early in the spring, while the natives stayed at home and saved themselves from the perils of the English weather, which decimated the foreigners. The latter also reared brood much earlier than English bees, and therefore they consumed more honey at a time when that commodity was obtainable in the fields. Observation from so high an authority is worth quoting. It may be that the British climate gives a long-drawn-out spring, such as we rarely have. The reasons given above, all point to qualities we prize. Again, Mr. Cowan states, "Carniolans were more satisfactory here than any other foreign bee." On page 145 of the same journal, Humble Bee states, under "Nuptial Flight," "The Carniolans are stronger on the wing, and would be more likely to mate a young queen. I succeeded in bringing them down to the ground by the dozen, or even to my hand, by the attraction of a young unmated queen

that I allowed to fly from the end of a fishing-rod, detained by a fine thread and noose round her body; but a knot has to be made in the noose so that it should not pull tight and injure her. As she flew in the air thus thus detained, it was a curious sight to see the flock of drones that gathered round her. I can not help thinking that in this way something might be done as to special mating."

There are many in America who will endorse all that has been said in the above of Carniolans. That experiment with the fish-pole and line *bates* all I ever heard of.

SPRAYING FRUIT-TREES WHILE IN BLOOM.

J. L. Byer, under "Canadian Beedom," rather boasts that over here in Ontario we have long had a bill to prevent the spraying of fruit-trees while in bloom. It was passed so many years ago that he doesn't know whether the time was before or after he (Mr. Byer) was born, but *I* am pretty sure it was one or the other. I can, however, go him one better. Fruit-growers now look upon any fruit-grower who sprays, or, rather, would want to spray, at such a time, as densely ignorant of what is best for his own interest.

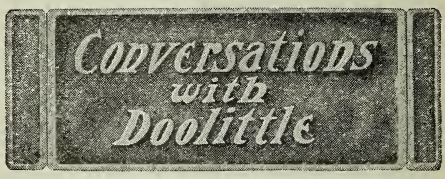
It is condemned by every horticulturist in the employment of the various departments of agriculture. The following question appears in the Feb. 21st issue of *The Farmer's Advocate*, and is answered by H. L. Hutt, Professor of Horticulture, Ontario Agricultural College, Guelph, Ont.:

Please tell us in a few words how far the pollination of flowers, fruits, and grains is dependent upon the agency of the bee. C. W. L.

The pollination of flowers, fruits, and grains is too large a subject to be disposed of with a few words. However, to be brief, I may say that most of the flowers and fruits which have large blossoms are largely dependent upon the bee and other insects for distribution of the pollen. The common honey-bee is one of the most valuable agents in this work of pollination. I have frequently noticed that some of the most productive orchards in this Province are those in which the growers make a practice of keeping a few hives of bees, or where bees are kept in the near vicinity. There are, however, many species of wild bees, as well as other insects, which are active in the distribution of pollen.

With regard to grains, I may say that corn is largely dependent upon the wind for distribution of pollen, which falls or is carried by the wind from the tassel at the top of the plant to the silks at the end of the ear. Investigations here have shown that rye is also, to some extent, dependent upon the wind for pollination, whereas most of the other grains, such as wheat, oats, and barley, are self-fertile. The red clover is largely dependent upon the bumble-bee for pollination, although it was claimed by some bee-keepers a few years ago that, with the introduction of the Italian, Cyprian, and Holy Land races of the honey-bee, these would be able to work upon the deep flowers of the red clover as well as upon the shorter flowers of the white clover, but I doubt if experience has proven that any of these strains of bees have proboscis long enough to reach the deep flowers of average-sized red-clover blossoms. H. L. HUTT.

The District Bee-keepers' convention, held at Brantford during the closing days of January, was a very decided success Friends of bee-keeping would like to see half a dozen of such held in various sections of the Province during the winter months. There was much instruction for everybody; no rivalry as to any thing; and if more of the grants to local societies were used in this way the Ontario Bee-keepers' Association would feel disposed to grant the local societies more money; and the Ontario Minister of Agriculture, the Hon. Nelson Monteith, would feel disposed to give, and I feel sure he would give, the Ontario Bee-keepers' Association more of an annual grant. The time has probably well nigh passed when such money will be used simply to enrich in the local societies each member to the extent of a queen or a subscription to a bee-paper, as has been done in the past. In Norfolk Co., among those who did hard work in bringing bee-keepers to the convention we had Messrs. E. Trinder, Lee Beaupre, and Dr. Wm. Burt, all extensively interested in the success of bee-keeping.



GETTING BEES READY FOR THE HARVEST.

"You remember, Mr. Doolittle, that the last time I was here we got no further than the first looking-over of the bees in early spring, fixing them so they had stores enough to carry them to the time when pollen became plentiful, and now I have come over to have you go on with the matter to where the bees are ready for the honey-harvest from white clover. Let us suppose that pollen is now abundant, and we are ready to work further at the bees, thus starting them on the road to success as much as possible. What is the first work to be done?"

"The first work is to see that all colonies have plenty of honey and a good queen."

"How much would you call plenty of honey when pollen first becomes plentiful?"

"I try to have the amount for each colony twenty pounds at this time of the year; and if some of the colonies have more than this, no harm is done at this stage when brood-rearing is to go on rapidly."

"But suppose some of the colonies do not have that much, how is the matter to be brought about?"

"I bring this about by saving up combs solid full of honey from the season previous; but where a person has not thought of this matter till spring is upon him, then he may have to resort to feeding; but let me assure you that combs of honey are as good for a colony as feeding, if not better. and there is far less work about such feeding than where liquid feed is used. But there need be but one year, and that the first, without these combs of honey; for after that any person can save enough combs of honey during the honey season to use the next spring for this purpose of having each colony rich in stores during April and May. Having the combs of honey, set in what is needed to give each

good colony at least twenty pounds; and in the absence of them this year, feed till all have that amount."

"I see. I saved about 100 pounds in combs, thinking that would be all I needed, and it may. If not, I will feed. You said something about a good queen. How am I to tell if this or that colony has a good queen?"

"By the looks of the combs that have brood in them. At this time of the year you may find brood in five or six combs. The brood in these combs should be in compact form, with eggs on the outside of the outside combs to the brood-nest (not brood-*chamber*, remember), and all the cells within this circle of eggs being occupied with one egg in each."

"Is that the way you tell?"

"Yes. I have noticed for years that a poor or failing queen does not lay like this, but 'scatters' her eggs all about, some cells having no eggs in them, and some with brood all the way from the egg to that nearly mature. A good queen will so deposit her eggs that there will be but very few empty cells among her brood, so that we often see the center of the frame, having sealed brood in it, and on the outside of this, larvæ—those just ready to seal next to the sealed brood, and waning in size from these toward the outside of the comb till we find those just hatched, and from these just hatched larvæ on outward the cells all full of eggs till the outside circle of eggs is reached. Such a comb tells at a glance that the queen in that colony is a good one; and a glance at a comb having brood of all ages scattered all through this comb with many entirely empty cells mixed in tells just as plainly that such queen is of little good as the mother of a colony from which we are hoping to secure a good yield of section honey."

"Suppose when I examine I find such poor queens, what then?"

"My advice would be to send south for queens to replace them, leaving the old queens in with their colony till the new ones come."

"Could I not save money by raising such needed queens myself?"

"Not at this time of the year, for it is the spoiling of a good colony to set it to raising queens by taking away its queen now; and any other than a good colony would only turn out so poor queens that they would be little better than the one you were desirous of superseding."

"I see. What next?"

"There is little more to be done now, more than knowing that all colonies have a good queen, and stores to the amount of at least 20 pounds; and I generally leave them alone from this till apple-trees blossom, when the apiary is to be gone over again."

"What is done when the fruit-trees bloom?"

"The first work now is to see the queen in each hive and know that her wings are clipped, so that she can not go away with the bees to parts unknown, if you do not happen to be on hand just when the swarms issue."

"How do you find the queens? This is the hardest work I have to do."

"In the first place you want to sit or stand with the back to the sun."

"What difference does that make?"

"All the difference between not finding the queen half the time when facing the sun, and finding nineteen out of twenty in two to three minutes after opening the hives, with the back toward the sun. Then when you take a frame out of a hive, instead of looking at it the first thing, look on the side of the frame next to the one you have in your hand, which is still in the hive, for 49 out of every 50 queens will begin to run around to the dark side of the comb they are on as soon as the light strikes them. If you do not see her on the first good look at the face side of the comb in the hive, then look for her on the comb you are holding. If not seen, take out another frame, looking on the comb in the hive first every time, and then on the side of the comb opposite you that you are holding. In this way any queen is easily found, unless you smoke or jar the hive till the bees are stampeded—in which case you might as well shut up such a hive and leave it while you are finding the queens in four or five other hives, when you can come back to the stampeded one again, with as good a chance of success as if nothing had happened."

"Well, I think that will be of help to me, for I had paid no attention to which way the sun was, nor have I done any thing but look at the frame I held in my hand each time."

"What more can be done now, depends upon how you wish to work your bees."

"What do you mean by that?"

"If you are to put on upper stories, this is the time to do this, with all strong colonies; and if you are to put the sections on without any further preliminaries, all the really strong colonies are now ready for such."

"Do you think that I had better try to work for section honey in fruit-bloom? I thought it better not to put on the supers till after swarming, as these supers would hinder the bees from swarming."

"It the supers hinder the bees from swarming it might be a good hindering; but as a rule they make little or no difference along this line. What you want is to get the bees at work in the supers as soon as possible; and the supers now on the hive allow the bees to cluster in them, and they will often make a start on them during fruit-bloom, storing honey in them, so the queen has more room in the brood-chamber, and giving plenty of honey to tide over the dearth of nectar we usually have between fruit-bloom and white clover. Remember that plenty of honey for brooding purposes is one of the great essentials at all times previous to the flow from clover; and failing here you will fail of the best results."

"You spoke of putting on upper stories instead of the sections at this time. What did you mean by that?"

"These are often put on so that the bees

will get into the habit of working above the brood; and when the honey harvest arrives, take off these upper stories and put on the sections, which the bees will immediately enter, as they have been used to working in upper stories."

"Do you think there is any thing in that?"

"Yes."

"But the bees store what they gather in those combs, do they not?"

"Yes, and in doing this the queen is given all the room in the combs below, so that she fills a larger space with brood, which gives a greater working force of bees in the fields during harvest. Of course, a queen-excluding honey-board is used to keep the queen in the brood-chamber."

"What becomes of the honey stored in the combs in the upper story?"

"It is generally extracted, but the publishers of GLEANINGS will send you a book that will tell you how it can be put into the sections by the bees, and thus advance your prospects of a greater yield of section honey than by any other plan I know of. This part would be too long to add to our talk to-day."

Gleanings from Foreign Fields.

BY W. K. MORRISON.

Honey market in Berlin, Germany, ordinary extracted, 30 cts.; comb honey, 37½.

In Barcelona, Spain, wax is quoted at 32 to 35; honey of Aragon, wholesale, 7; honey of Catalonia, 6½.

THE HONEY MARKET IN TUNIS (BIZERTA).

	Honey rec'd.	Highest price.	Lowest price.
July.	25,032	18 cents.	17 cents.
August.	125,151	16 cents.	11 cents.
Sept.	67 362	16 cents.	11 cents.
	217,545		

The Journal d'Agriculture Tropicale gives the prices of tropical wax as follows, per lb.: Sierra Leone beeswax, in Liverpool, 30 cts.; Madagascar beeswax, in France, 31 cts.; Tonkin beeswax, in France, 30 cts.; Japanese vegetable wax, in France, 29 to 30 cts.

According to *L'Apiculteur* the following prices are for large amounts of wax F. O. B. boat or wagon in Belgium, per pound: Benguella, West Africa, 32 cts.; Zanzibar, East Africa, 32, Portugal, 33; Algeria, in loaves or squares, 33; British India, probably dorsata, 28½; Cuba, 33; Mozambique, Portuguese East Africa, 33; palm wax, white, from Brazil, 45; the same, yellow, 45.

We quote the following from *L'Apiculteur* concerning the prices of honey and wax in France. The very best quality of extracted honey, wholesale, 20 cents. In Brittany the price is less—16 to 20. Wax, in Brittany, 30 to 35. At Havre foreign honey is about 10 cts. Wax, at Havre, is 35 cts. Morocco wax at Marseilles is 30 cts.; Algerian wax at Marseilles is 31 to 32 cts.; Levant wax at Marseilles, 32 to 35 cts.; Aden wax at Marseilles, 34 cts.; honey, very best French extracted, at Marseilles, 20 cts.

In *L'Abeille Bourguignonne* a honey-dealer advertises honey for sale, wholesale, at these prices, per lb.: Finest French honey, 21 cts.; second quality, 20; third quality, for feeding bees, 16; Chilian honey, 18; honey chocolate in squares, 30. It may be remarked that honey chocolate seems to be popular in some parts of Europe. Probably honey in bricks with a flavoring of chocolate would sell in this country, now that the pure-food law is in force.

At the meeting of the bee-keepers' associations of Germany, Austria, and Hungary, held in Loben, Austria, last fall, a resolution was passed asking the governments of their respective countries to "retain the word honey" for the product of the honey-bee, and not allow the word to be applied to any artificial production or imitation. There is good sense and economic judgment behind this resolution.

Some of the German bee-keepers are recommending milk and honey for the children. One paper has an article on the subject, so laudatory as to be positively alarming. However, there may be something in this, as we know both buttermilk and honey have very valuable properties, and a combination of the two ought to be good when we come to think of it. We know they mix something with the buttermilk in Kentucky. As GLEANINGS is a temperance paper we can not mention names; but in all the other States honey would be a better ingredient.

L'Apiculture for January calls attention to the pure-food law of France, passed April 1, 1905, which in its main outlines resembles the law passed by our Congress, June 30, last year. But the power to enforce the law is vested in the Secretary of the Interior. The latter seems to have the power to call on all public officials to help him administer the law. There are 15 laboratories charged with the detection of adulteration or misbranding of all alimentary substances. The editor sagely remarks that the subject of adulteration is of great importance to honey-producers.

Mr. Halleux, in *L'Abeille et sa Culture*, states that the retail price fixed by the local federation of bee-keepers for Condroz, Hesbaye, and Luxembourg, Belgium, is at the rate of about 20 cts. per lb. He also states the price is not excessive, as the price in Berlin is higher — 33 to 37 cts. At Bremen comb honey is worth 30 cts. per lb.; and at the market in Reichenberg, Bohemia, good

honey is 35 cts. per lb.; and at Montreux, Switzerland, the price of honey is actually 60 cts. per lb. He says the latter is for a very fine honey which is rare, and eagerly sought for by purchasers. We should like to know something about this honey—what flower does it come from?

Some time ago the French held an interesting exhibition of colonial productions at Marseilles, with a view to showing what the different colonies could do; and one of the most interesting features was the exhibits of honey and wax. French Indo-China did not exhibit much; but Madagascar and Reunion did, as bee-keeping in both islands is interesting. The great colony of Algeria did not seem to do much; but Tunis made an excellent exhibit, and carried away several gold and silver medals. We do not usually consider Tunis much of a bee country; but it is, and practically all of Africa is a sort of bee-keepers' paradise—no "wintering troubles" there.

The French paper, *Journal d'Agriculture Tropicale*, has an article on the culture of sunflowers, in its January issue, which is worth reading. No one seems to make a success of cultivating sunflowers but the Russians, who, in the government of Saratoff, cultivate it in large quantities profitably. It is also cultivated to some extent in Bokhara. It is said the amount of oil secured from it there averages 21 per cent, but that is from varieties specially selected for the production of oil. The residue is, of course, valuable for feed or fertilizer, just as cotton-seed meal is. Where the conditions are favorable the sunflower is popular with the bees. If there is any place where sunflower culture will ever prove a success in this country it is Kansas. The article mentioned states that the yield of seed is greatly increased by applying a dressing of nitrate of soda. Probably the only reason sunflower culture does not succeed in this country is because we do not have time to study its peculiarities and culture.

In *L'Apiculteur* for January a bee-keeper living in Tunis raises the question for scientists to answer: "What is granulated honey?" He thinks its analysis is somewhat different from that of liquid honey, and he instances the fact that old honey is different from new honey by chemical analysis. This matter will probably come up before the National Pure-food Commission sooner or later. One thing we are sure of, only a part of the honey really granulates: the other is frozen or held in suspension by the granules. Slowly melt a quantity of solid honey, and the dextrose and levulose can be separated very readily. The latter runs away from the dextrose, which is in the form of finely granulated sugar. The writer of the note has evidently studied honey somewhat, for he states that honey two or three years old has lost all its sucrose (cane sugar) by inversion. He evidently thinks freezing or granulation causes a similar change; but, does it?

L'Apiculteur remarks "Hum" to the assertion that the Arab race of men are famous for their vigorous physique, and that they prefer honey as a sweet in their food. As a matter of fact, the Turks, Arabs, and Syrians are splendid specimens, many of them, in rugged physical ability. In the Southern States, Cuba, Haiti, San Domingo, Jamaica, and elsewhere they may be seen carrying heavy loads all day long beneath a broiling sun, and that, too, in a moist atmosphere. They eat but little meat, and seem to prefer bread, dried fruits, sugar, honey, and similar foods. It has been proven, also, in European army maneuvers, that sugar is an excellent food for soldiers on the march in heavy marching order. This is contrary to general opinion, and even to the teachings of science. Honey is even better, as it requires practically no digestion, and is taken up rapidly by the human system. Honey leaves practically no residue, and therefore the stomach, spleen, kidneys, and liver are untaxed? Do you see the point?

LAYING QUEENS.

Is it Practical to Have Two or More in One Colony During the Summer Season?

BY E. W. ALEXANDER.

[If a beginner or some old bee-keeper unknown were to write along the lines in the subjoined article the average apicultural editor would be inclined to turn it down and say that such writer had, perhaps, better get a little more experience before wading out so far into deep water. But Mr. Alexander is no novice in the honey business. His annual crops go up into the carloads, and his experience covers a lifetime. He has given us a great many valuable hints. We hope, therefore, that the reader will not be ready to exclaim "Impossible! absurd! nonsense!"

If our correspondent had said any thing about perforated zinc separating each laying queen from every other one in a separate hive-body or hive-section, the scheme would not seem to be such a departure from common knowledge and practice. Perhaps he does use it; if so he does not say so. But even a plurality of queens separated by zinc in two or more hives has proved to be a failure with some. As it is, we hope our correspondent will not drop the matter right where it is, but go more into details; for most of us have come to believe that is impracticable to have more than one queen in a hive except in a few instances where Nature apparently is departing from her usual rule and allows mother and daughter to work under the same roof.

If any other correspondent has succeeded along these lines of plurality of queens in one hive, without zinc

to keep them apart, we should be pleased to hear from him. Now having said all of this we will let Mr. Alexander do his own talking, for he is quite competent to defend his position.—ED.]

Yes, I think it is With the ever pressing desire to increase our surplus we are anxiously looking for new methods whereby we can secure strong full colonies early in the season in order to take advantage of any flow of nectar that may come. This has caused us to do some experimenting along the line of keeping two or more laying queens in one colony. For several years we have known that laying queens will never sting each other if they can possibly get away from one another. This fact caused us to try some experiments along this line, with the following results:

First, a great increase in the amount of brood was noticed in these hives; in fact, they were so full of brood that but few cells were left for honey or pollen; and when extracting-combs were put on top a very large surplus was easily obtained. This fact alone was enough to encourage us in testing this method still further. Then another result from our experiments, so far as we have gone, is that we have never had a colony with two or more laying queens show any desire to swarm.

This is something we can not understand, as we expected these strong full colonies to be the first to swarm. In order to see if we could force one full colony last summer to swarm, we put 14 good laying queens into it at one time, and in about two weeks we examined it and found the 14 queens we had put in two weeks before, and their own queen all in harmony together, with nearly every cell in their combs containing brood; then during the rest of the season we used this colony as a queen-nursery. Sometimes we would take three or four queens from it to use in other colonies, and occasionally we put in five or six at a time, and none were ever balled or stung. In fact, there was no queen injured in any way in that hive during the season. I have seen three or four on the same side of a comb crawling among the bees, and whenever they would touch each other they would start quick in an opposite direction.

When Dr. Lyon was here last summer he tried to get a photograph of these queens; but they would run from each other so quick that he could not catch them in a photo.

VIRGINS RECALCITRANT.

Now, don't think that you can handle virgin queens in this way, for you can not. They will sting each other or a laying queen as soon as they come together. There is not much you can do with virgin queens until they are fertilized and commence laying; then their desire to sting other queens is all gone. I have often kept two or three laying queens under a common drinking-glass on the work-bench for a number of days without their trying to sting each other.

The worst feature to overcome in giving our colonies two or more laying queens is in knowing how to introduce them safely.

Last summer my son Frank discovered the most practical method of introducing queens that I have ever heard of—a method whereby over 90 per cent are safely introduced and laying within 18 hours from the time the parent queen was removed. He wants to test this method still further another season before giving it to the readers of GLEANINGS; then if it still works as well as it has with us in the past there will be no trouble in giving our colonies as many laying queens as we may desire. If so, it will be another advance made in modern bee-keeping.

I can already see several advantages in keeping two or more queens in one colony. First, in requeening we would have to remove only the oldest queen. Next, our hives would be kept very full of brood, which would give us strong colonies, and there would be no more complaint about our bees storing too much honey in the brood-nest. Then, for some unaccountable reason, it does seem to prevent the desire to swarm; and with colonies that contain nearly twice the usual working force we certainly would secure a much larger surplus. Our experiments so far along this line have been so encouraging that I expect to test it thoroughly another summer. I really enjoy testing and working out new methods, and I am thankful I have sons who can fill my place when I am gone. The young honey-producers of the future can not afford to remain long in the ruts we older men have made, but with renewed perseverance they must push forward until they have made great improvements over many methods now in use.

In the above I have given our experience so far as we have gone on this subject. Had my health last summer been so I could have tested this more thoroughly as to its bearing on natural swarming I should have done so; but as it was, I could do but little. To me it does not look reasonable that, to increase the number of queens in a hive, would in any way prevent the colony from a desire to swarm; but still it is barely possible that it may.

A particular friend of mine has been anxious for me to give our experience on this subject to the public, so that others could test it also this coming summer; otherwise I would not have written this article before another fall, for I have always made it a rule to write nothing but what I was perfectly sure was fact, and for that reason I desired to test this whole subject another summer before making it public. I expect this new method, in common with some others I have given, will be tried in a bungling way by a few bee-keepers so that there will be no possibility of its being a success in their hands. Then these parties will be the first to send in their reports condemning the whole thing. But, fortunately, this class is but small, and is daily growing less. This is encouraging; and when we all do the best we can we hope to leave the world the better for our having lived.

Delanson, N. Y., Jan. 17.

SOME NEW YORK STATE BEE-KEEPERS.

When to Practice Shook Swarming; Gathering Sweet-clover Seed.

BY D. EVERETT LYON.

Among the progressive and successful bee-keepers of New York is Mr. Aaron Snyder, of Kingston, a producer of large crops of strictly fancy comb honey. Mr. Snyder's success is not altogether due to the location, which is a good one, but rather, also, to the fact that he uses up-to-date implements and keeps abreast with modern methods.

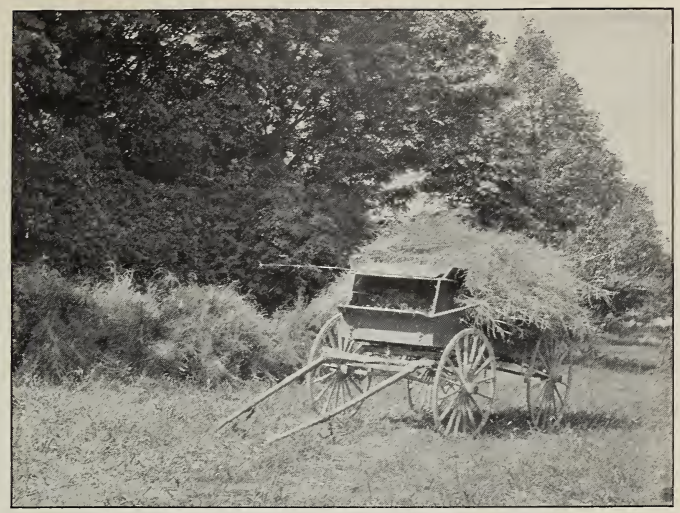


FIG. 1.—A LOAD OF SWEET CLOVER HAY NEAR THE APIARY OF THE SNYDER BEE AND HONEY CO., KINGSTON, N. Y.

The Snyder apiaries, aggregating about 400 colonies devoted exclusively to comb honey, are scattered in four yards varying from three to ten miles from home. Assisted by his son Frank, Mr. Snyder looks over every hive once a week during the honey-flow.

This, with him, is a necessity in order to prevent too much swarming. As soon as he finds a colony preparing to swarm he cuts out all cells; the next week, when he visits that colony, if preparations for swarming are found, he cuts out all cells again. The next week, if he finds queen-cells started he at once makes a shaken swarm, which settles the swarming business with that colony for the season. He thinks it bad practice to continue cutting cells more than twice; and if the colony is extra strong, one cutting is preferable. He advises against shaken swarms, however, unless the colony is determined to swarm, although he concedes that for some and in certain localities it may be better than his plan of cell-cutting.

The bee-forage, while not over-abundant, is of a continuous character when it is started, so that the bees have access to white and sweet clover, basswood, goldenrod, buckwheat, and some blue and white aster.

FIG. 2.—TEMPORARY COMB-HONEY-STORAGE CRATES MADE OF CONDENSED-MILK BOXES.

The buckwheat does not form such an important part of forage as the sweet clover, not being grown anywhere near as extensively as further up in the State; but the sweet clover of both the white and yellow varieties grows abundantly, especially near a meadow country about 1½ miles from home.

Mr. Snyder had just arrived at the home yard with a load of sweet clover for seed, when I called upon him, which is seen in Fig. 1. A part of the load is still on the wagon.

From the above statement it will be seen that, though there is no basswood or clover rush of honey, and that soon ending, still the varying plants furnish a more or less continuous flow. It is not surprising, therefore, that the apiaries average about 75 lbs. of comb surplus to the colony, the total output of which was about 22,000 sections. In fact, most of it was harvested late in August when I called,

and I was pleased with the manner of its temporary storage. Shallow boxes, in which canned condensed milk comes, were used, holding 34 sections each, and these were tiered in the storage-house—see Fig. 2.

HOW TO GET THE SECTIONS IN THE OUTSIDE ROWS CAPPED OVER NEARLY AS WELL AS THOSE IN THE CENTER

Mr. Snyder discovered a plan by which he was able to get the sections in the outside row capped over almost as readily as those of the center, and that was by putting cleats, about ⅝ inch thick, up and down on the inside on one side of the super, then when filling the super he put in a fence separator first (that leaves ⅝ space outside the fence), then a row of sections, then a fence, then sections, and so on till full; then with the super-springs it makes every thing snug and nice, leaving another ⅝ space outside the last fence, these outside spaces being considered valuable, and claimed that, by so doing, it allowed the bees a larger space between the fence and the super side in which to cluster, which, with the added heat at that point, prompted the bees to cap more readily. Certainly the outside combs were as fancy as the others, and the proof of the pudding is in the eating.

The honey and hive house is a part of the barn, while a small horse-car out of commission, resting beneath the shade of a very large Norway spruce-tree, constituted a handy repair-shop in the home apiary.

FIG. 3.—MR. SNYDER FINDS THE TENT INDISPENSABLE AT CERTAIN TIMES.

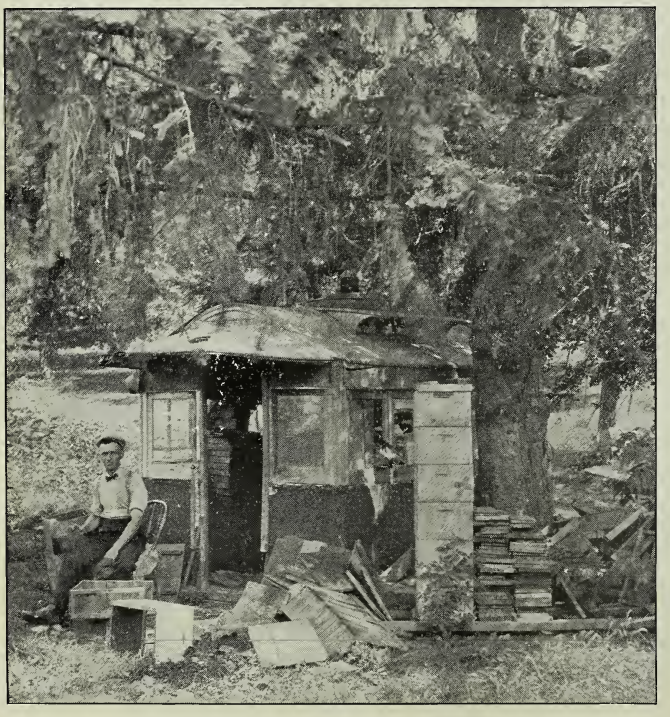


FIG. 4.—AN OLD HORSE-CAR MAKES A GOOD STORAGE-SHED.

Mr. Snyder finds the tent indispensable at certain seasons, and uses it much, but he prefers one a third larger than the ones usually cataloged.

A wheelbarrow and combination tool-box and seat, as seen in Fig. 5, are considered indispensable.

In the matter of rendering wax from old combs Mr. Snyder extracts nearly every ounce of wax; and when he gets through with the slumgum it is fit for the ash-heap.

The character of the press is seen in Figs. 6 and 7, and it does its work thoroughly.

Personally Mr. Snyder is of medium height, tipping the beam at 210 lbs. He has never drank a glass of liquor nor a glass of beer. He bubbles over with geniality and good-fellowship. The writer was made thoroughly at home, and enjoyed the hospitality so characteristic of bee-keepers.

Mr. Snyder not only keeps bees because they are his bread and butter,

but also because he loves the little fellows. New York bee-keeping has for several years suffered the setback that came to many parts of the State some years ago when black brood devastated so many yards; but with such men as Mr. Snyder, Mr. Alexander, and a host of other royal good fellows of the Empire State doing so much in and for apiculture, it won't be long before bee-keeping will be more largely carried on than now.

The outlook for bee-keeping in New York was never better than now.

Rye, N. Y.

[It is gratifying to see the similarity between this press and the one which we have used so much. The construction is very much the same, even to the round can or tub, although our can is made of heavy tin while this one is of wood bound with steel hoops.

Last summer Mr. Snyder sent us four barrels of slumgum, saying nothing about the method which had been used for rendering the wax. We found that it was so clean it would not pay to work it over. Now we see that this slumgum was from a press very much like the one we were using.

There is no question about the value of this unheated press, which is practically the same as the Hatch press. The extremely low cost, the great capacity per day, and the beautiful color of the wax, are all points well worth considering.

The scheme of putting an extra fence between the outside rows of sections and the sides of the super has been used generally in nearly all fence supers. It is a good plan just the same.—Ed.]

HONEY-CROP REPORTS.

Can Accuracy be Secured?

BY CHAS. H. CARGO.

The reports of the honey crop and its condition as the season progresses is a very desirable item to all bee-men, and especially to those who are largely interested. The changing of a cent in market value means very large sums, especially to heavy dealers, and an unnecessary slump in the market caused by misgivings as to holdings generally is a factor which ought to be eliminated.

There is probably more honey produced than is generally supposed, and any normal increase will only keep pace with the growing demands of a growing nation.

The weighing of single hives has proved its value, but it lacks giving a proper average for a whole apiary or a whole county. To solve this difficulty bee-men interested in such things can use a weighing-beam with ice-hooks mounted on a tripod, or any wheeled contrivance that may be convenient, and need only to wheel from hive to hive, and weigh as many hives as will give a fair average. But I am not fully persuaded that a single hive from each apiary will not give accurate results. Here is the reason:

We are not interested in any one man's yield, and are really weighing specially selected hives from all the bees in the State. Now, if 100 hives are weighed semi-weekly in Ohio, and these hives are situated in all sections of the State where there are good flows of honey, and where there are poor,

FIG. 5.—MR. AARON SNYDER, HIS WHEELBARROW, TOOL-BOX, AND A PART OF HIS APIARY AT KINGSTON, N. Y.

FIG. 6.—THE SNYDER WAX-PRESS AS IT IS ACTUALLY USED.

where the bees are doing well and where they are not, will not these 100 hives give a final result of accuracy equal to that of weighing the same number in one apiary? And will not the good and bad reports be necessary, actually necessary, to get the proper average?

While admitting one hive is not an accurate quantity, because it can represent only a limited area, and may even be misleading, still in 100 colonies will not the test prove its value? The National Bee-keepers' Association could do nothing to increase its prestige and popularity more than to take up the question of combining with the excellent service of GLEANINGS' honey-crop reports, and furnish its members a monthly report, say from May to September, of statistics thus compiled. My idea of these reports is based on that followed by the government in certain lines, and the reports would read something like this:

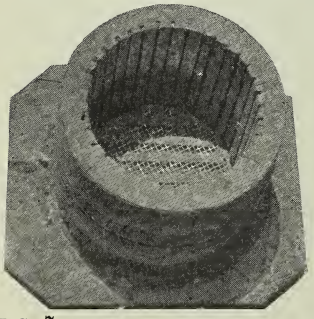


FIG. 7.—THE WOODEN TUB OF SNYDER WAX-PRESS.

Locality.	Principal honey-flow for fortnight	Hives weighed	2 weeks gain	Season's gain	% of Av. crop
Ohio	White clover	100 lbs.	800 lbs.	5000 lbs.	80 %
Estimated hives in State			.....	.....	....

Now given the number of hives in commercial yards, and the yield of the State is approximately arrived at for market purposes.

Another point, some hives will not do well, and some will be abnormal. How about these? Simple enough. They represent a factor present in all beeyards, and properly go right into the report, because they are representative of just the conditions we are trying to arrive at. They are not misleading, but tend to higher accuracy.

Charleston, W. Va.

[GLEANINGS will be pleased to coöperate with any intelligent movement that may be inaugerated to help along a line of effort suggested by our correspondent.—ED.]

YELLOW AND WHITE SWEET CLOVER AT DR. MILLER'S.

Their Value to Him.

BY DR. C. C. MILLER.

Last summer our cow-pasture was perhaps one-fourth covered with sweet clover. It grew rank, but the cow didn't seem to care for it. Still, there was so much of it that it would hardly be noticed if she ate quite a bit. But the grass was also luxuriant and abundant, and she evidently preferred that. By and by there came a dry time, a very dry time, and pastures were brown. Then it was that the sweet clover showed its value. It remained cheerfully green while the grass about it was dry and parched. It had, however, run up to six feet and more in height; and if you stop and look meditatively at a solid mass of sweet clover six feet high you'll realize that there's a lot of feed in it. Gradually it was reduced in height (although, of course, the cow didn't eat from the top down) until finally it was reduced to a height of two feet or so, as you will see by Fig. 1 from a photo taken Sept. 3, 1906. Compare this with the height of the single stalk in Fig. 2, which was taken the same day. But the comparison is not entirely fair, for No. 2 grew on rich low ground that had the wash from the elevated ground surrounding, and this stalk growing alone was especially selected on account of its unusual height. I was afraid the slender top might not show in the picture, so I held a dried weed beside it at the same height. From the ground to the top was just nine feet. I may have seen taller sweet clover, but I'm sure that's the tallest I ever measured.

That the cow does not eat it down lower

FIG. 1.—A PASTURE OF SWEET CLOVER NEAR THE HOME OF DR. C. C. MILLER, MARENGO, ILLINOIS.

than shown is a good thing, for each plant is bushy, throwing out fresh growth on all sides as fast as eaten off, thus furnishing a constant supply of tender growth until freezing weather. It also makes it of greater value for the bees, for the fresh growth is always blossom growth, and if you had been present at the time the picture was taken it would have reminded you of bees working on buckwheat.

Some one will say: "But I thought you told us the honey crop of 1906 was an entire failure with you; and if the bees were so busy on sweet clover why the failure?" My dear sir, a pasture-field for a single cow is not a very large field of operation for a yard full of bees. To be sure, that was not the only sweet clover within reach, but the road commissioners took care that not much of it should be allowed to blossom on the highways. Yet some credit should be given to sweet clover and cucumbers, for, besides having the hives heavy with honey for winter, I had some combs filled that I have stored away for next spring. Just wait till I go down cellar, and I'll tell you how many there are. . . . There are 248, most of them full, and from that down to half full.

I count those combs much the same as so much white-clover honey in sections. I'll tell you how. The hives are, I think, heavy enough so that the bees would go through till clover harvest without any feeding. But at the opening of the harvest there would be a good deal of empty space in the brood-chamber, and that space would have to be filled before the bees would devote much attention to the supers. Now if I take away combs that are empty, or nearly so, replacing them with these reserve combs, don't you see that every pound of such honey thus given means another pound of white-clover honey in the sections? Besides, it's a "dreadful" comfortable feeling to know that you are fully provided against any contingency if any colony in spring should be short of stores.

I have always thought I didn't care for yellow sweet clover, because it comes two to four weeks in advance of the white, right when white clover is doing its best. But last season made me change my mind; for white

FIG. 2.—LUXURIANT GROWTH OF SWEET CLOVER AT DR. MILLER'S.

clover didn't do its best, although blooming abundantly; and if the yellow is an unfailing yielder the same as white sweet clover (and I suppose it is), then the yellow would come in very handy.

In the eyes of the general public, sweet clover is a very noxious weed whose first encroachment must be carefully watched, lest it get a foothold and spread persistently and promiscuously. The great objection in the eyes of the bee-keeper is that it is so hard to get a stand of it. I have tried several times to get a solid field of it, but have not yet succeeded. This cow-pasture comes the nearest to a success of any thing I've had, and I did not try to get a stand there.

I'd like to have a solid field of it so I could have some hay that was nothing but sweet clover. My stock care more for it dried than green, and I suppose that is the general experience. The horses care more for it than the cow, but other cows may care more for it than ours.

DEMONSTRATION OF LIVE BEES AT FAIRS.

How to Get Twice the Market Price by Advertising; the Advantage of Permanent Customers.

BY G. BRUNDAGE

At the last Orange Co. fair I had an exhibit of honey and live bees. The first day, as we were fixing up the exhibit the general superintendent said, "Why, are you going to have live bees here in this flower-tent? I think you will have trouble—don't think it will work—every one will get stung to death." But I told him that, although showing live bees in a tent was new work for me, yet I had handled a few bees, and I would assure him that there would be no trouble, and no one stung, and, further, that I would promise him if any one were stung I would remove the bees at once. Not one person was stung in the whole four days. Well, it did not take me long to get some nice comb honey over to the general superintendent's tent, and also some to the superintendent of the flower-tent where I had my exhibit. After that we were shown every courtesy.

MISS EMILY TOMPKINS, WHO, WITHOUT VEIL OR GLOVES, HANDLED BEES IN A CAGE AT THE COUNTY FAIR.

I had a one-frame observatory hive, an eight-frame hive, a Pearl Agnes hive, and a twin mating-box all with bees and queens. These were all in the wire-cloth tent. Many people were around all the time, and we were nearly flooded with questions. Sometimes a dozen would be talking all at once — in fact, we were nearly talked to death. It is no small job to manage such an exhibit and explain all the details pertaining to bees, honey, and queen-rearing. I was very fortunate in securing the services of a talented young lady, Miss Emily Tompkins, whose photo is shown herewith, as she appeared at the fair. She would go out among the crowds of eight or ten thousand people, then go into the bee-tent and handle the bees, with bare head and arms. Ladies outside would say they would not go in there for thousands of dollars; but this young lady had the will power, and a very level head, and did not mind it at all. Every old bachelor would stop and say,

with a knowing wink, "Miss Honey, how much is this honey?"

In regard to the business part of the enterprise I would say that I consider it a very good and profitable advertisement—at least I found it so. I sold a good lot of honey at the fair, and the end is not yet, as I have received lots of orders and complimentary letters from people who saw my exhibit. One man bought fifty pounds for his own use.

Be sure to deal fairly with all, and your trade will grow each year, and you will not have to ship your honey to the glutted city markets for five or six cents per pound. Your friends the farmers, and your city cousins, will pay you three times the money. It does one good to see the children's eyes get big when you go into a house with a nice pail of that sparkling sweet. Not long ago I went to a home where there were three little girls, and gave them a quart jar of extracted honey; and do you know, friend Root, it did me more good to see those three pair of eyes glisten than to sell five hundred pounds? The mother told me a few days afterward that they never tasted any thing like it—in fact, did not know the taste of good honey; and these are well-to-do people. She told me they bought some honey a few years ago, but it was a very poor thin sort of sour stuff, and they had never bought any since. But she said they wanted more of mine—you see another customer for life. So, my bee-keeping friends, the secret of my selling is in giving some away. I suppose I give away not less than five hundred pounds in the course of a year, and it is a better advertisement than any gained by the use of printer's ink, as every pound will be sure to bring more and more customers every year. But you must produce good thick rich honey, ripened on the hive, and not that thin artificially ripened green stuff that has to be sold from four to six cents per pound. I always get from ten to thirteen cents for all my extracted honey, so one ton is worth about two and one-half tons of that four to six cent stuff that is shipped to the wholesale market. I am getting more retail trade each year, and sell hundreds of pounds from the house to the farmers. I also have some retail trade in New York and in two others States, New Jersey and Connecticut. The customer always pays the express. As I said before, if you sell the right kind of honey these customers always have friends who will be sure to want some the next year, so it makes an endless chain. Some take as much as fifty pounds. I ship the most of it that goes a long distance, in tin pails. For the retail grocery trade I use glass packages in one to three pound sizes.

Salisbury Mills, N. Y.

HOLTERMANN'S CONCRETE BEE-CELLAR AND WORK-SHOP.

[We have before urged the very great advertising value of making live-bee demonstrations at county fairs and at other public gatherings. We have seen the evidence of

this so repeatedly in our own experience we wonder that more bee-keepers do not avail themselves of the plan instead of shipping their honey off to the big cities where it comes into fierce competition with the honey sent in by other bee-keepers.

GLEANINGS offers its congratulations to the young lady who is brave enough to go inside a wire-cloth cage and handle live bees before a crowd.—ED.]

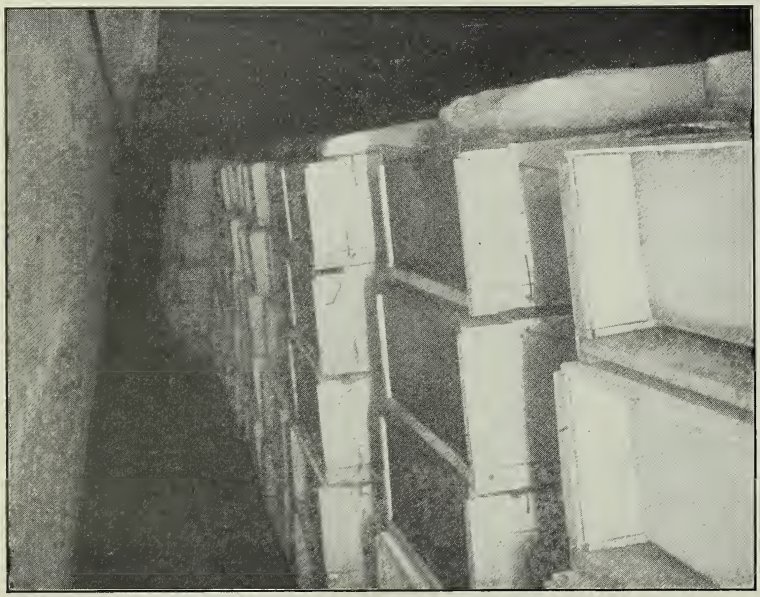
THE WINTERING PROBLEM.

An Ideal Bee-cellar; Some Ventilating Problems Neatly Solved.

BY R. F. HOLTERMANN.

[When we called on Mr. Holtermann last January we naturally had a curiosity to see his new mammoth bee-cellar which he had recently constructed, and which he believed was about as complete and perfect in all its appointments as any thing that had ever been constructed. The opportunity to see it was gladly accepted. We have inspected a good many of the bee-cellars in the United States and Canada, but we are free to say that we have never run across any thing more unique or nearly perfect in its general arrangement than this combined extracting-house, work-shop, and bee-cellar underneath. The whole structure is made of solid concrete—that is to say, the foundation walls as well as those above ground are made of cement and sand poured into wooden forms a good deal after the manner of those described in our issue for November 1, page 1363.

Mr. Holtermann does not say any thing about the very roomy work-shop and extracting-room in the story above ground. This has a large stove, all the modern appliances for extracting and liquefying honey, and a few necessary tools for making and putting together supplies. Mr. H. thus describes the cellar. —ED.]



AN INTERIOR VIEW LOOKING DOWN THE AISLES OF THE HOLTERMANN BEE-CELLAR.

The individual bee-keeper can understand and solve the wintering problem only as it is studied in all its bearings. If individual stock and variety of bee, stores, and their nature, position, and previous treatment, the manner in which the bees are protected during the autumn and winter are not taken into consideration in coming to conclusions, but little progress can be made when we seek to detect the effect of winter repositories under certain conditions. Temperature and moisture undoubtedly play an important part in the question; but the one who considers this alone is like the man who builds a fine house upon an unknown foundation. We as bee-keepers jump too much to conclusions, and then spend our reasoning powers and energies in defending ground perhaps hastily and injudiciously taken.

INDIVIDUAL AND VARIETY.

The variation in individual and breed has long been recognized by breeders in other lines of live stock. The mountain sheep and the Down each requires certain environments to be at its best. So with bees. I am satisfied that no one variety of bee will do best under all conditions. In our northern winters we require a bee with a strong constitution. Long confinement requires good digestive and assimilative powers and a nervous temperament not easily upset. A nervous strain may bring on diarrhea. Irritability, as a rule, is not an indication of nerve strength

What can be done by selection in breeding corn and other crops can be done by selection in breeding bees; but if done, the microscope, the finely balanced scale and accurate measure, the chemist, and the winter repository, with facilities for controlling temperature during long periods—these, combined with patient investigation, will determine what points do bear on successful wintering and bee-keeping, and what are ideal conditions at which the bee-keeper shall aim.

STORES.

So far as I know, we want abundance of stores, free from germs of fermentation. I believe that bees are and can be successfully wintered on honey rich in pollen; yet this

pollen, particularly in the early part of winter, is undesirable, and a feed of granulated-sugar syrup in the fall for the center of the brood-chamber is desirable where the bees are long confined in winter quarters. The stores should be kept covered by the bees, thus preventing granulation and the absorption of germs and moisture. Empty combs outside of the cluster, stores within, is what we want rather than that which is too often the case —the opposite condition.

FALL PROTECTION.

Years of observation and reflection has convinced me that bees are better in winter repositories as soon as we have reason to believe that cold penetrating weather has arrived. This, with us, is about Nov. 15. A week or two out in the cold may do more harm than can be undone by a later flight.

HOW PROTECTED.

The above is important, and generally does not receive adequate consideration. There should be sufficient ventilation through the hive to carry from the bees and stores the foul air and moisture, and yet not carry away an unnecessary amount of heat. To do this the coverings should not be air-tight, and yet they should be sufficiently warm to keep the air and heat from passing through more rapidly than to carry out the object heretofore mentioned. I use an unsealed cloth; and, upon this felt cloth, felt paper, old carpet, tea-box matting, or chaff cushions

VENTILATION.

Bees respire. In that excellent address of Mr. S. D. House, delivered at the late Brantford convention, and already reported in GLEANINGS, he gave the result of a series of experiments reported by eminent men. Under the most favorable conditions for quiescence the bees gave only three to five respirations in three to five minutes. No animal, be it man or beast, can breathe without, in the act, consuming oxygen and emitting carbonic-acid gas. If the air is foul the system suffers; up to a certain point the respiration and circulation increase. This law is as fixed as that the earth revolves about the sun.

We may say, "My bees get no systematic ventilation," and be correct. My stock of cattle may live by browsing and feeding where they can during the winter; the conditions may be so they will do fairly well without my care; but live stock must get their feed, and bees must consume oxygen. As we value our reputation let us desist from saying winter repositories require no ventilation. Bees have blood; that blood circulates, and bees breathe through openings called "spiracles," carrying air even to the substance of the brain and nerves. These organs being there, intelligent thought should for ever preclude us from claiming that it is not requisite that winter repositories with bees do not require to be ventilated.

It is a matter of whether that process of ventilation can be seen and noticed, and is under control, or not. No ordinary house or cellar is ever air-tight. If the bees are quiet, and respiration at the minimum, and the number of hives limited, probably, in an ordinary cellar, there is generally enough circulation without special means. When winds are high, and the temperature outside lower than that inside, ordinary cellars generally have too much ventilation with correspondingly rapid and injurious changes in temperature. But when calm, and the outside and inside temperature about the same, then the lack of system and the want of regular intakes and outlets, with *power* to move the air, is felt by the bees, even if not by the bee-keeper. In my cellar there is a system of ventilation, and by means of fire in the bee-house above, or by means of fire in the center compartment, 5×5, Fig. 1, two stove-pipes discharging into the chimney F, Fig. 1. I can get a current of air up the chimney. Then through openings on the north and south side, at the base of the chimney, the foul air is drawn from the bottom of the cellar, and a change of air is maintained. I should like to see a fan in the chimney, run by clockwork and weight, or some other inexpensive power.

TEMPERATURE AND LIGHT.

Observation leads me, until I know more at least, to prefer a temperature of 42 to 45°. Darkness as absolute as we can secure it is, I am sure, the desirable condition.

QUIET AND ODOR.

Bees may become accustomed to many things; in fact, I believe *they may be trained* to a greater extent than many admit. We can, however, make no mistake by securing as absolute quiet as possible, and I aim at this as to vibration, noise, light, and odor; no liquefying of honey, and no rendering of wax is allowed in the bee-house above while the bees are in the cellar below.

DESCRIPTION OF CELLAR.

The bee-house illustrated is of concrete, and even the chimney is of this. The chimney has a cowl on top of it, with its back to the wind to assist in getting a draft. On each side of the chimney is a box ventilator projecting through the peak of the roof. This is 12 in. square, with a slide to regulate the amount of air passing through. These shafts enter the cellar at the ceiling above, and are for warm weather. The building is 50 ft. long by 25 wide. The cellar walls are below the level of the ground, the object being to get a more uniform temperature in the ground, and less liability for moisture to condense on its walls.

The ceiling of the cellar, to secure uniformity of temperature and prevent condensation, has, as seen in the upright-elevation plan, Fig. 2, G, a tongue-and-groove floor; C E, felt paper; D, air-space; C, tongue-and-groove floor; F, the floor of the cellar, is concrete. The only openings from the outside into the cellar are seen in Fig. 1. From B to A are two glazed waterlime-jointed tiling, coming above ground just outside of the bee-house at B B, the wall going down 8 ft. into the ground; then passing under the cellar wall

and floor, entering the cellar at points A, A. Then there is a stairway, C, which is covered by two doors at the level of the ground, and again closed from the cellar by two doors. Through these doors the bees are brought in and out.

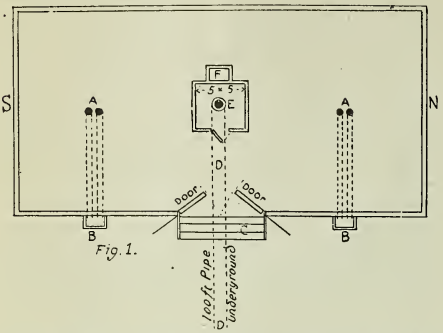


Fig. 1.

Ground plan of cellar. Inner compartment, E, has solid concrete walls extending to ceiling. Opening E communicates with a sub-earth ventilator, D. When in-rushing air is too cold a fire is built in the stove, tempering the air, when it passes upward to the ceiling, passing into the square box wooden flues shown at D D D D, in Fig. 3, where it is distributed to every point in the cellar.

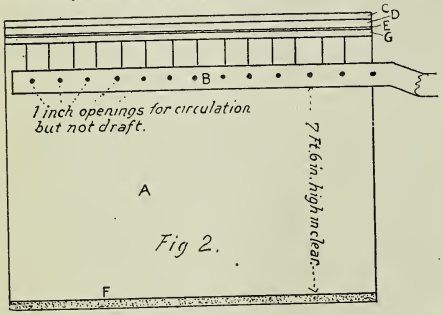


Fig 2.

Perpendicular elevation of bee-cellar, showing the square box ventilating-flue with its one-inch holes as shown in diagram 3.

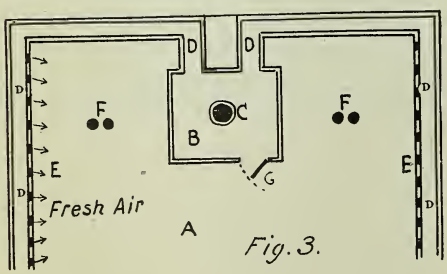


Fig. 3.

Horizontal plan showing scheme of ventilation. Room B has solid concrete walls to prevent danger from fire from the stove at C. Under the stove is the sub-earth-ventilator opening that supplies fresh air, which, if too cold, is warmed and then forced through the distributing-flues D D D D, which are perforated by one-inch holes. The flues D D are closed at the ends, and all air must pass out at the holes indicated by the arrows. F F are ventilators carrying foul air and moisture by means of flues extending through the roof.

D is a 12-inch glazed pipe with waterlime joints 8 ft. under ground. This enters the cellar in the compartment E, a coal-stove standing over this opening. In this compartment, if the air is not sufficiently tempered by its passage under ground it can be warmed before it passes into the cellar.

In Fig. 3 the system of distributing fresh air is shown. The illustration is not quite correct as to the central compartment, however. B is supposed to be the same central compartment as E in Fig. 1, and the distance between it and the west wall should be greater. At the top of this compartment, on the west side, are pipes, D, D, D, which carry the fresh air to the north and south end of the cellar, E E respectively being the north and south ends. From there through many one-inch openings (see arrows also, in B, Fig. 2, and the method of turning the corner of the wall), the fresh air is evenly distributed through the cellar and carried off in a more or less foul condition through openings in the bottom of the chimney F in Fig. 1, and at ventilators F F, in Fig. 3, said ventilators showing through the roof on either side of the chimney shown in the exterior half-tone view of the cellar.

I have a curtain this winter on the north, south, and west walls, and find it assists in equalizing the temperature. This winter I have had more or less of air passing through all the air-passages, yet have kept a sufficiently high temperature half the time without fire.

Two years ago I darkened all the windows in the bee-house above, and partially opened a trap-door which leads by means of a stairway alongside of the center compartment to the cellar floor. This, however, gave too rapid variations in temperature and was abandoned. During the last strong gale, with the wind reaching a velocity of over 60 miles an hour, in 24 hours a change from 59 to 12° was experienced; and with no change in the dampers in the ventilators there was a variation of only 2½° in the cellar.

In visiting my cellar, Mr. Editor, you noticed that the stocks of bees in the twelve-frame Langstroth hives were powerful large clusters of bees hanging under frames with full capacity. This, of course, has an influence on the number of bees found dead on the floor. Again, the bottom-boards on my hives are pretty clean of bees; but up to Jan. 23, by measure I swept 1¾ bushels of dead bees from the floor.

Brantford, Can.

[As we go into the shop above we lift a large trap-door, light a candle, and descend into the lower regions. All is quiet, save now and then a little zip, zip of a flitting bee lured by the light of the candle. The air feels about 45. It smells fresh, notwithstanding there were from 400 to 500 colonies in the cellar. There were but few dead bees on the cellar bottom, and at the time of our visit one could go all over the cellar without stepping on a dead bee. Mr. Holtermann showed us the inner compartment where the stove is located, and which is used for tempering the air when necessary as it comes in from the sub-earth ventilator. Notwithstanding it was a cool brisk morning, and our ears tingled in the open air, even after a brisk walk, the air in that inner compartment

where we came in had been sufficiently tempered through its underground passage, so that no artificial heat was needed. It is in only extremely cold weather, we believe, that Mr. Holtermann finds it necessary to warm the air, and perhaps at other times when the circulation is sluggish. We followed the course of the ventilating-flues designated by D, D, in Fig. 3, C; and on pushing the candle up to one of its one-inch openings we could plainly see by the deflection of the flame that the air was pushing out. The long course of these ventilators clear around the cellar, closed except at the one-inch opening, distributes the air evenly over the entire cellar.

Mr. Holtermann omits to draw attention to the ventilating-pipes sticking up through the roof on either side of the chimney. These, if I remember correctly, extend down through the ceiling of the cellar to within about a foot of the floor. Their purpose is to assist the chimney-flue to carry out the foul air. On going outside of the cellar we could see the white frost at the top of the ventilators, showing that the foul air was continually passing out, the moisture collecting and freezing into a white frost.

This cellar is one of the largest in the country, being exceeded, perhaps, only by the mammoth bee-cellar of E. W. Alexander and that of the late Capt. J. E. Hetherington. The extensive bee-keeper may well copy after the general plan of this; for on the principle that the proof of the pudding is in the eating of it, this cellar certainly does its work.

It should be remembered, also, that Mr. Holtermann is an advocate of large and powerful colonies. It is one thing to keep a cellar sweet and nicely ventilated with weak or moderate-sized colonies; but when we put some 400 or 500 twelve-frame rousing big ones in, we all admit we have a different problem to contend with, and yet this cellar takes care of them.

We respectfully suggest that this journal be laid aside, or marked, so that late this summer or fall, when one is ready to begin his cellar, he can have something definite to work on.—Ed.]

DEEP VS. SHALLOW BROOD-CHAMBERS.

The Value of Courtesy in Criticisms.

BY C. P. DADANT.

Mr. Editor:—When I replied to your request in stating the reason of my preference for deep brood-chambers I had no idea of starting into a discussion. I expected to have my say and be done. But several of our good bee-keepers have jumped on me, and I feel that I want to say a few more words before I drop the subject.

It would appear from the article of Mr. Chambers that the shallow hive is of such great advantage that it is forcing the manufacturers to handle it in spite of themselves. He perhaps forgets that, over twenty years ago, Mr. Heddon invented a shallow-frame hive which was drummed and advertised all over the country, for which Mr. Heddon even secured the approval of Mr. Langstroth, in his declining days, when he had no longer any apiary practice, and that, in spite of all that, the Heddon-hive supporters may probably be yet counted with two figures. If I judge of the number of shallow hives now in use by the amount of comb foundation sold for such shallow hives, it is but a very low per cent (less than two) of the number of colonies in existence among progressive apiaries. Yet the shallow hive was recommended long before the movable frame made its appearance, as I said in a previous article, and the main claim made for it was the ease of manipulation.

Of the many advantages claimed for these hives, one looms up most conspicuously—the greater ease in handling and transporting the hives. Shallow hives are more desirable for migratory bee-keeping. I do not do any migratory bee-keeping, neither do 999 out of every 1000 bee-keepers. They are easier to transport from one spot to another, but I do not transport hives We have hives which have stood in the same spot for twenty years. I think but little more of moving a hive than a house, and I have never had need of a hive which could be packed around like a trunk.

The foundation is easier put into a shallow frame. I know this to be a fact, for we use shallow frames for our supers; but putting foundation in frames is done only once in 25 or 30 years. If the foundation has been well put in, it will not need to be changed for a lifetime. Shallow frames may be extracted more readily, because the knife runs across them more readily. That is true, and that is why we use shallow frames in our supers. But we rarely extract honey from the lower story of our large hive. There is no need of it.

It would appear that the difference in opinion comes from the difference in methods of manipulation. Our opponents would have us think that they have the better way because they handle hives; we would have them think that we have the better way because we do less handling of hives, therefore have less hard work.

We are told that, if we wish to give room, we have to put in one additional frame at a time, while they double the size of the hive at one operation. We, too, can double the size at one operation (if we choose to do so); but we have the resource of enlarging only a little at a time if we see fit.

I don't relish the idea of hunting a queen by shaking the whole swarm out. I can do it faster by lifting a frame or two. Neither do I like the idea of helping a weak stock by giving them a full story of brood from a powerful colony or a full case of honey. I prefer a more gradual help.

But the matter which has the most weight in my mind is the greater amount of brood secured from a queen on deep frames. Mr. Chambers calls this an entirely unproven assertion. It may be to him. It is not to me.

He says, "I deny that this style of laying is maintained throughout the season." That is true, and the reason of it is that the bees put honey or pollen here and there, and destroy the harmony of the brood-laying. But if Mr. C. will examine as I have done, he will find that at no time is there so large an amount of brood as when the regularity of laying is kept up. This is not difficult to understand by any one who has watched the queen in an observation hive, and has noticed the deliberation and slowness of her actions. Time is lost, much time is lost, when she does not follow a regular course in her laying.

And, please, do not tell me that you can rear stronger colonies than I do by our methods. Mr. J. M. Shuck, of Des Moines, who was an advocate of reversing hives, sent us his foreman once to win us over to his methods because, as they said, they could rear more brood by inverting than by any other method. The foreman came, stayed two days, and went away, won over to the Dadant methods.

Mr. Bondonneau, the editor of the French GLEANINGS, "*L'Apiculture nouvelle*," when he made a trip to the United States, some three or four years ago, showed great astonishment at the strength of our bees, and said to me that he had not anywhere seen such strong colonies as he saw in our apiary.

In summing up, allow me to thank those friends who do not agree with me for the courtesy of their criticisms. If we can't agree as to size of hives we can at least agree to be pleasant, for it is worse than useless to discuss by abusing one another, as I have seen it done in some other places.

Later.—I am in receipt of the Feb. 15th number of the *Review*. In this paper Mr. Hutchinson, who has at one time been in favor of the horizontal Heddon hive, and who also argued in favor of manipulating hives instead of frames, shows a decided preference for the deeper frame, and I desire to quote his last words, with which I concur completely: "My plea is for simplicity in hive-construction—for plain simple frames, without projections or staples, without any excrescences whatever. Then I would hang them in a hive that is equally simple. I believe—yes, I know—that all these 'fixings' that are put upon frames and hives are a needless expense and bring no recompense."

Hamilton, Ill.

[We wish to indorse particularly the sentiment "If we can not agree as to the size of hives, we can at least agree to be pleasant, for it is worse than useless to discuss by abusing one another." That sentiment we hope all our correspondents will carefully keep in mind. We will not allow, if we know it, any thing but courteous and friendly criticism in these columns, and we believe that our pages in the past bear pretty fair evidence of this. Some correspondents, when they get involved in a controversy, feel inclined to ridicule and abuse an opponent. Ridicule is never argument, and abuse is out of place in modern journalism. Let us disagree; let us argue, if need be; but let it be courteous, with a disposition at all times to recognize and acknowledge the good points made by our opponent. Good discussion with an honest square difference of opinion should and does bring out a lot of truth, and for that reason our columns are open to all such —ED.]

HOW TO GET MORE HONEY FROM THE CLOVERS.

How to Destroy the Clover Midge; Furnishing Seed to Neighboring Farmers.

BY WM. M'EVOY.

This is the all-important line to put the work on, and yet it is the most neglected of any. The basswoods are fast disappearing, and less alsike clover is being grown; and, this being so, every bee-keeper should help to improve his own locality by getting a certain amount of alsike-clover seed sown every year, as by so doing he will get larger yields of this choice honey, which sells for the highest price in all markets.

The nearer the fields of clover are to the bees, the larger the yields of honey will be. Mr. Arthur Quantz, of Langstaff, York Co., had fields of alsike clover only a few rods from his bees, and he took over 260 lbs. of extracted clover honey from several of his colonies, and this in 1906, an off year when the crop from clover was almost a complete failure in many parts of Ontario. Mr. Alexander Donaldson, of Binbrook, Wentworth County, had fields of alsike clover only a few feet from his apiary, and secured by far the largest crop of section honey from clover of any man in our province in 1906.

I mention these cases to show that it is not how far bees will go for honey, but how close we can have them to the fields of clover, that counts every time.

Feeding off red clover up to the 20th of June, or mowing at that time, destroys the whole of the first brood of the clover midge; and when the second crops heads out there will be little or no midge to injure the heads, and then nearly every head of clover will come into full bloom; and if the weather conditions are right then, Italian bees will gather a good deal of honey from the second crops of red clover.

In September, 1905, I extracted over 3000 lbs. of pure red-clover honey after giving the bees plenty to winter on. This honey was a light amber in color, and good in flavor, and sold for the same price as the honey gathered from white clover. My bees being Italians, they worked well on the second crop of red clover, which was not injured by the midge in my locality in 1905 on account of the first crop being cut early.

In 1906 red clover was not cut soon enough in my section to destroy the first brood of clover midge; and when the second crop was ready the midge started in with full force, and practically ruined it for both seed and honey. The controlling of the red-clover

midge will result in more seed for the seed-grower and more honey for those who keep Italian bees near it.

For many years I have made a practice of looking closely at larvæ to see how the bees were feeding it. Some was very poorly fed in colonies where the bees had every chance possible to do better, and in others I found the brood much better fed where the chances were not so good. The differences in these cases were in the bees. I found the pure-bred Italians the best of any race at feeding their brood, and also best at gathering honey from red clover. I am not in the queen business, and have none for sale.

Woodburn, Ont., Can., Jan. 24.

[This is a good time of the year to get the farmers to sow alsike and red clover in the vicinity of the bee-yards. We go so far as to offer seed of alsike *free* to the farmers within a half or three-quarters of a mile of any of our yards. Our old rule was to give the seed at half price. At present we are inclined to believe it will pay us to furnish the seed free, especially alsike.—ED.]

BEE-KEEPING IN NEW ZEALAND.

Prospects there Not Great.

BY A. E. DEWAR.

On page 1488 of your issue for Dec. 1, 1906, appears a copy of a letter from the editor of the *Waikato Times*, referring to what purports to be a statement by Mr. Hopkins, our venerable Government Apicultural Expert. While I agree with the opinion expressed as to Mr. Hopkins' peculiar suitability to occupy that position, I can not believe that the facts and figures given were ever expressed by him, and I can not allow the article to go unchallenged. The general impression which it is intended to convey appears to be that New Zealand is a bee-keepers' paradise, only awaiting the influx of a number of cute American bee-keepers who will reap a rich reward. Now, the sooner this illusion is dispelled the better, as I am sure that a bitter disappointment would await the large majority of persons who journey to this country with the hope of making a living by apiculture. I say the "large majority" advisedly, for I am not a pessimist, and know that there are some localities where a respectable livelihood could be made by bee culture; but even in these districts the seasons are uncertain, as you also find them in America, especially when clover is the main source of supply (I think Dr. Miller will agree), and some other culture should be combined with bee culture to help tide over the bad seasons.

No one knows better than Mr. Hopkins the extreme difficulties to be met with in New Zealand; but under his supervision, with the enforcement of legislation dealing with foul brood and other diseases, and the adoption of modern and scientific methods, the condition and results of the industry will materially improve. He would be the last person to suggest the publication of an article which would have the effect of inducing immigration to New Zealand on misleading statements, as he knows that there are numbers of capable bee-keepers in this country who would be pleased to reënter the business if local conditions warranted them in so doing.

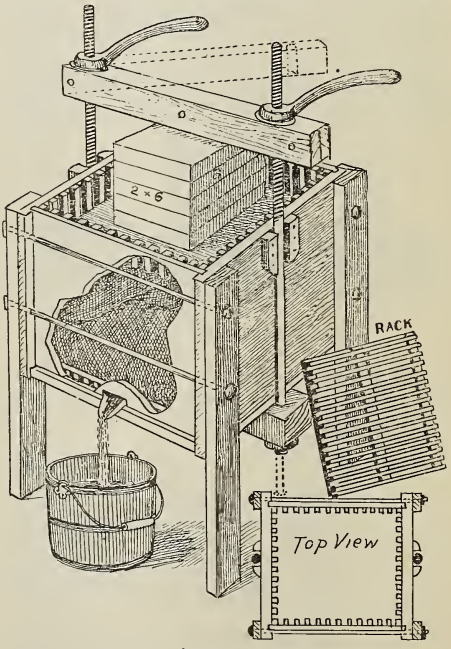
Auckland, N. Z.

AN UNHEATED WAX-PRESS.

How to Construct a Press Entirely of Wood.

BY JOHN LOCKWOOD.

The drawings shown herewith make the construction of my wax-press plain. To begin rendering wax, first put the cleated rack into the bottom of the press. Take a burlap sack that is big enough to hold 100 lbs. of bran and rip the seam in one side and the bottom. Spread this burlap sheet over the press; push it down in and see that it fits well into the corners, letting the edges hang out over the top. Now take a whole sack and put it into the press with a hoop in the

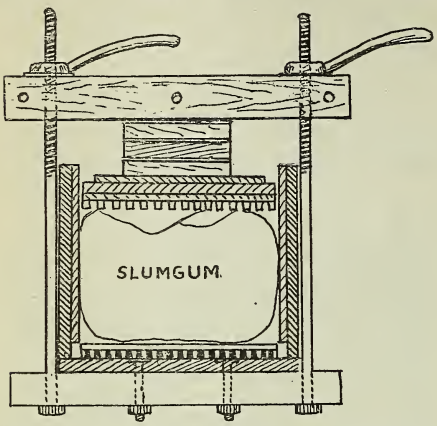


JOHN LOCKWOOD'S UNHEATED WAX-PRESS.

top to hold it open. Now dip into your tub, full of boiling comb; take the hoop out of the sack; push it down with a stick to make it fit on the bottom and in the corners. Fold up the mouth of the sack and the sheet over it. Put the follower on, with the blocks on top. Swing the cross-bar over and push the screw up through the hole in it. Put on the handle and turn both handles down, one at a time.

After the wax is pressed out, take off one

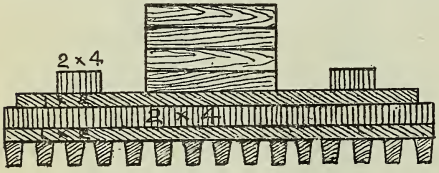
handle; let the screw slip down even with the top of the press and unfold the first burlap so it hangs over edges. Now get hold of the top of the sack and pull it up some so it



CROSS-SECTION OF LOCKWOOL'S WAX-PRESS.

can cool a little. Then empty out the slumgum, put the sack back, and fill it again as before.

To boil the comb, use a four-hole stove with all the lids off. Put on a big tub containing two buckets of water, and add the



CROSS-SECTION OF FOLLOWER.

comb as it boils, until the tub is nearly full. The water and free wax flow out of the press immediately, leaving only the slumgum to press.

Brigham, Utah.

[The construction of this press is good, and it ought to give satisfactory results. It will be seen that it is on the same principle as the Hatch press in that it is unheated, the comb being melted up with water in a large boiler and then dipped into the press lined with burlap.

As outlined in our two articles on the subject of wax-presses, we are very sure that one pressing, as described, would not remove more than 85 or 90 per cent of the wax, leaving 15 or at least 10 per cent waste. Since the publication of the two articles, many letters have come in which have led to many further tests, all of which have proven conclusively in our estimation that one pressing in any form of an unheated press can not be relied on to get all of the wax. We would suggest, therefore, that our correspondent take the refuse that has been through the press once and put it through the same treatment again, comparing the amount of wax obtained from the second rendering with that obtained from the first.

Many presses similar to this one are used all over the world, but we doubt whether there are many producers who use this method that run the refuse through the second time, for it looks so perfectly clean after being pressed once. We would urge all such, however, to try at least a second melting, for we think at least 10 per cent more wax will be obtained. After the second rendering there will not be over 2 per cent of waste, as we have proven.

It would seem desirable, if the body of this press above described were to be so deep, that it be only about half filled with melted comb at a time, otherwise the cheese will be so thick that too much wax may be left, even after two renderings.

Some years ago Mr. F. A. Salisbury, of Syracuse, N. Y., used a press made entirely of wood, and closed at the top to prevent all escape of heat. His idea was that, in this way, the refuse would not cool so quickly, and he would, therefore, have more time to get the wax out; but we are of the opinion that, even in such a press, closed at the top to prevent loss of heat, one pressing would still leave a good deal of wax. We have made a number of experiments with the ordinary Hatch press, with the exception that a jet of steam was introduced so as to keep the press and its contents very hot. We found that, even under these conditions, one pressing would not get all the wax by any means, leaving almost as much waste as when no steam was introduced. It is true that, with a press heated in this way, the slumgum can be taken out, shaken up, and pressed again, and that this operation can be repeated a great many times until the waste is reduced to a very small amount; but this actually takes more time than it does to melt up the refuse again and run it through.—H. H. ROOT.]

PARTHENOGENESIS.

A Recognized Phenomenon Among Plants.

BY JOHN H. LOVELL.

Relative to the statement in GLEANINGS, page 163, "the man who can prove that plants reproduce themselves generation after generation by the principle of parthenogenesis should have a monument erected to his memmory," some of your readers may be interested to know that parthenogenesis is a well-known and generally recognized phenomenon among plants. It will probably be found described in all the larger text-books on botany. By parthenogenesis among plants, as among animals, is meant the development of a new individual from an unfertilized egg or spore. It should, of course, be carefully distinguished from vegetative multiplication by bulbs, cuttings, offshoots, etc. It is also entirely distinct from hermaphroditism where

both sexes occur in the same flower or in the same animal.

Parthenogenesis is not uncommon among the seaweeds, or algæ (*Chara crinita*, *Spirogyra*), and fungi; it is unknown among the mosses, but is of common occurrence among the ferns. It was first discovered in ferns by Professor Farlow, of Harvard University, in *Pteris cretica*

Among the higher or seed plants, parthenogenesis has been observed in *Antennaria alpina*, *Thalictrum purpurascens*, etc. There is good authority for stating that, by cutting off the tops of young flowers of taraxacum it has been shown that normal seeds are produced parthenogenetically. Many species of *Hieracium* also set seed without undergoing pollination. Many other examples in the plant world might easily be cited, but the above are doubtless sufficient.

By the remark, "There is no pollen produced by the basswood or linden," I presume that it is intended only to state that pollen does not occur in sufficient quantities to prove attractive to honey-bees. There is, however, doubtless more than an ample supply for fertilization and the production of seeds. This is certainly true of the European linden. Hermann Müller, the foremost authority on the pollination of flowers, states that he has seen numerous flies both sucking honey and feeding on the pollen. While he observed thousands of bees resort to the flowers for honey, he found none with pollen in their baskets. When bees can procure nectar they rarely stop to gather pollen. On flowers which have the honey more or less concealed, it is not uncommon to observe the larger bees sucking honey, while the smaller wild bees (*Andrena*, *Halictus*), whose tongues are not long enough to permit them to do likewise, are collecting pollen.

Waldoboro, Maine.

F. L. SLADEN'S BOOK ON QUEEN-REARING IN ENGLAND.

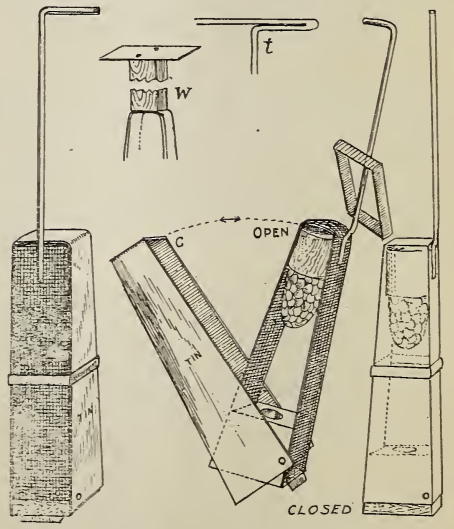
BY W. K. MORRISON.

Books (or, rather, booklets) on queen-rearing are like the autumn leaves in Vallambrosa—they come thick and fast; and it is a good sign, too, for the accurate and careful breeding of queens tends to produce a decided improvement in our present races of bees. England has been rather lethargic in this department of apiculture, but makes some amends by the publication of the above little work on the subject. The English bee-keepers are mostly opposed to the breeding of foreign races of bees, which is rather odd, seeing the same country excels in the breeding of all kinds of horses, cattle, sheep, swine, poultry, rabbits, cats, dogs, cavies, canaries, etc. The principal authorities over there are pinning their faith to the ordinary black bee, and this may account for their failure to secure great results in the honey season. There can not be any doubt that the judicious crossing of races of bees, and also the blending of desirable characteristics, is a work calling for our highest praise and ungrudging support. This is particularly true when the queen-breeder has some scientific knowledge and a wide experience of bee-keeping to begin with, as Mr. Sladen had. He also visited the United States, and investigated thoroughly some of the most up-to-date queen-rearing yards in this country.

In addition he also visited India to observe the different species of bees in that country. The result is an interesting monograph on the breeding of queens. The subject-matter describes the plans and practices of a queen-breeder such as we are used to in this country, hence we need not quote from it. The chapter headed "Races of Bees" will be agreed to in the Western Hemisphere, but it seems doubtful if English bee-keepers will subscribe to it. But we wish Mr. Sladen every success in his effort to popularize the new races. The chapter entitled "The Honey-bee in India" is worthy of attention, because it helps us to a better understanding of the value of *Apis dorsata*.

There is also an account of "a scent-producing organ" in the abdomen of the worker honey-bee, which ought to interest a good many. The organ described is situated between the fifth and sixth dorsal segments of the abdomen, and was first noticed by Nassanoff, of Moscow, in 1883, and described by Zoubareff in the *Bulletin of Apiculture*. Zoubareff thought the excess of moisture contained in nectar might be voided by this gland.

There is also an account of some of the enemies of bees found in South Africa.



SLADEN'S IMPROVED NURSERY-CAGE FOR QUEEN-CELLS AND VIRGIN QUEENS.

Mr. Sladen resembles some of our own breeders in that he soon discovers a new short cut to success, and, by way of supplement. has published an article, giving his latest

methods, in the *British Bee Journal* for March 22, 1906. The principal feature of this communication is what he terms "Sladen's improved nursery-cage for queen-cells and virgin queens."

Here is his description of the cage:

My improved nursery-cage for the hatching of virgin queens and for holding them until they are distributed to the nuclei is illustrated in the cut. The ripe queen-cell is held in position by the wire-cloth sides, which can be easily adjusted to grip securely queen-cells of any size. The cage opens on a new principle, which makes the insertion or removal of the queen-cell or of food for the queen expeditious and easy. The cage hangs between the combs some distance from the top by the stout wire shaft, the bent portion of which rests on the top-bar of one of the frames. The pupa, or queen, is thus kept warm between brood, and this is very important in the cold nights of May and June. The cage itself is of the smallest possible size, so that a number of them can hang side by side between two combs without widely separating the combs, and one or more of the cages can be inserted or removed on turning back the quilt without lifting out a frame. The part *c* may be made of tin plate or of celluloid. With the latter material the queen and queen-cell can be easily seen inside the cage while it is closed. At *t* and *w* are shown different kinds of shafts.

This cage can be used, if required, as an introducing-cage. The candy-hole is covered with a tin slide, which, when pushed to one side, enables the bees to liberate the queen by eating through the candy.

Mr. Sladen deserves great credit for his enterprise and courage in attempting to inculate better breeding methods for bee-keepers in England. The book bears the imprint of the *British Bee Journal* office, London, England.

MANAGEMENT OF OUT-YARDS IN MICHIGAN.

How to do Without Queen-excluders; Wide Spacing in Extracting-supers; More About Sectional Honey-houses.

BY E. D. TOWNSEND.

Since Mr. H. H. Root's write-up on page 1241, 1906, of his visit here last summer I have received several communications with a list of questions to be answered—so many, in fact, I am convinced there are many interested in this out-yard question, and that more particulars are wanted along this line. This letter is a fair sample of what I have received:

Dear Sir:—The article on your extracted-honey methods in out-apiaries was very interesting to me, especially the clause on excluders. I had this year an accidental confirmation of your views. Early in the season, on about 20 colonies I put on second stories without excluders, instead of with them, as I always have done, because I desired the queen to lay all through both bodies, so that I might make new colonies later. To my surprise the second stories, when I went to look at them the next time, were full of capped-over honey with almost no brood at all in them; and as that didn't suit my original purpose, and since I was too busy to do any lifting-up, I put on a third story *above*, and still had almost no brood at extracting time above the brood chamber. I am going to put out another 200-colony apiary next spring, and I think I shall save myself the cost of excluders and the bother of handling them and taking care of swarms If extracting is done at the out-yard, a little brood is not much of a setback any way. Heretofore, from my out-yards I have hauled home the supers full of honey, freed from bees by escapes, and returned the empty ones the following spring, letting the bees at the home yard clean them up after extracting. But I think I will try my next out-yard with a cheap extracting-house and no excluders at all.

Now a question, If only light frames are used (as I do) in a ten-frame body, don't you think the thickness of such extracting-combs will have a tendency to discourage the queen from using them? Have you had experience in that connection? It seems natural that it would. It is true that, if actually much pressed for additional cells, the bees might cut the combs down to proper depth; but the tendency would seem to be to stay in the regular brood-chamber, with regular spaces and cell depths, as long as possible. I shall give your plan a trial next year in the new apiary. I have always thought excluders an absolute necessity, but long saw that they were a great bother and interference with the best work of the bees.

W. M. JANES.

Mr. Janes' 20 colonies were worked just the same as we have been working about half our colonies for several years. The secret of swarm control in the production of extracted honey is in giving the second story before the bees begin to think of swarming.

This practice gives the queen an abundance of room to lay before and during the fore part of our honey season; then, later, after the main breeding season is over, by giving third and subsequent upper stories *on top*, the queen is crowded down into the lower story at extracting time, for you will remember we do not extract our white honey until a week or ten days after the season closes. This leaves the honey on the hive clear through the season, and gives us beautifully flavored, rich ripe honey. But were we to extract during the honey-flow, as some do, or raise up this second story and place our third story *under* the second, then the whole plan would get a black eye, for, quite likely, we should find our brood-nest in the top story, and the brood-nest bare of both honey and brood, at the close of the season.

I said above, put *all* upper stories on *top*. While this is our practice, it's not absolutely necessary, for there will be practically no brood in the third and subsequent upper stories given, so if one sees fit he can lift the third story up and place the fourth between the second and third story, if the colony needs more than two additional stories; for by this time the queen is back in her original quarters, the brood-nest; and as the main breeding season is now over she will not bother the upper story any more during that flow.

We have two yards where queen-excluders are used. All our extracted-honey colonies are in 10-frame L. hives, with excluders over these 10-frame bodies. We have excessive swarming about one year out of three. I can hardly explain why this is so; but all who have kept bees long, find that, certain seasons, our bees are more inclined to swarm than others. It is these excessive swarming seasons that put a damper on excluders, and set us to studying out some system to do away with excluders and the accompanying excessive swarming, and still have our upper stories practically free from brood at extracting time, and the nearest I have come to it is with the system outlined above.

In regard to thick combs in the upper stories discouraging the queen from going above, this has been tried quite extensively. While it does sometimes seem to discourage her, at other times it does not appear to do

much good, as it is very easy for the bees to cut these combs down. If this thick-comb idea would work, and keep our upper stories free from brood, we could hardly afford to adopt this system. One reason would be, and a very good one too, is that honey stored in these great thick combs would hardly be equal, as to quality, to that stored in natural-thickness combs. When I say "natural-thickness combs" I mean those the thickness of brood-combs, or a little thicker, say 1½ inches, spacing from center to center. We have an exhibition of honey, etc., at our State convention each year, and we usually have a little honey there to show. Now, to produce this "show honey" we place full sheets of foundation on some of our strongest colonies, and let them draw them out as they fill them, then leave them on the hive clear through the season, and as long after as we dare to for fear of getting inferior honey mixed with it during our full flow. Of course, it has been capped over all this time, but it is getting better all the time.

I presume that, by this time, some one is beginning to think that, as foundation for our comb honey is always drawn out as filled—that comb honey ought to be much superior to extracted. This is not so, as our comb honey, to meet the demand, and bring the top price, must be taken off the hive just as soon as capped, or it will be travel-stained. This means a few cents per pound less to the producer; while the extracted is left, say a month longer, on the hive, it gets very thick and delicious—much superior to comb.

We use eight combs in our ten-frame upper stories to extract from, and we are making all our frames ⅞ inch thick clear around, otherwise the same as the L. brood-frame. This is 1¼ inches, spacing from center to center. When we uncap we use a long uncapping-knife and *cut deep clear* down to the ⅞-thick frame. You see we have lots of material to cut off—so much that there are hardly ever any uneven combs but that are uncapped the first time over; then we got lots more wax; and then when we are through our combs are only an inch or so thick, which thickness we much prefer to any thing thicker.

Dear Sir:—I wish to bother you with another question. That extracting-house pictured on page 1242—please give me dimensions of, and some of the details of building. Is that plank for outside wall tongued and grooved, or plain plank? Is it planed, or rough as first sawed? I see it says the building is not troubled by mice. Does the tar paper prevent that by its odor, or is the house made mouse-proof? Is there any ceiling overhead, or is the roof made bee-tight and no ceiling needed? Is it large enough to store all supers, etc., during winter? W. M. JANES.

Our 12×16 sectional honey-house is built as follows:

The foundation is in two sections, 8×12 feet, scant, in size, and is built of 2×6-inch material, placed 16 inches apart, with a 2×6 spiked on the ends. The floor is of matched material; the sides and the roof-boards are planed on both sides. I suppose it could be made of rough inch stuff, but it would not work so well, neither would it be as light to move as planed material. The sides and ends of the house are built separate, and are held together at the corners by means of bolts. The posts are 5 feet 10 inches. The roof is one-third pitch. A part of our houses are shingled, and part tarred roofing, and each half of the roof is built separate. The frame-work, except the foundation, is all of 2×4-inch material planed down to 3½×1½ inches, as this is heavy enough for this size of building, and makes it lighter to handle. The rafters are three feet apart. The frame for the sides is three 16-ft. and two 5 ft. 10-inch pieces of 2×4. When nailed up, the three long 2×4's furnish a plate, a sill, and a girth. Now, this girth is placed exactly the right distance from the plate so that the window will just fit in between, and slide, on the shop-window plan. We used to buy glass sash for these windows; but experience teaches us that a board window is better to move; and in the hot season, when the houses are in use, we do not need them shut, only night or rainy weather; so now we make them without glass, and depend on opening them for light, etc. Then the opening is covered with wire cloth on the outside to keep the bees from getting in. A window of this description is built on each side, a little in front of the center, which brings them in the part of the building where most of the work is done. This makes a light airy room that is a pleasure to work in compared to some of the small dark dungeons I have seen some bee-keepers use.

A 2 ft. 8 in. by 6 ft. 6 in. paneled door is placed in the center of the front end. The frames for the ends are built similar to the ones for the sides, with the addition of a gable end built at one-third pitch. The end rafters of the roof rest on the gable ends. The siding is put on up and down, and projects down one inch below the sill, so that the water will not crawl in under upon the floor. The siding on the gable end also projects up enough to cover the outside rafter, so as to give a more finished appearance. The corner posts are set in such a way that, when the building is set up, the flat sides come together. This makes it hold together better.

After the house is set up we paper the sides, ends, and the roof between the rafters with roofing-felt fastened on with lath, being careful to cover all the cracks, etc., to exclude bees. So far we have never seen a mouse or ant in one of these tar-paper-lined houses. This felt roofing is nothing more than a high grade of tar-paper, and when first put on has a strong tar smell that disappears in about 60 days.

To Mr. Janes' last question, "Is it large enough to store all supers, etc., during winter?" I shall have to answer no if he means a 200-colony yard. This size will do very well for a 100-colony yard, and there will be room for every thing during winter, although it's a little crowded when our upper stories and every thing are in. We have one 200-colony yard, and use two of these 12×16 houses at this yard, and get along all right.

Remus, Mich.

SYSTEMA AGRICULTURÆ.

A Review of a Bee-book Printed 220 Years Ago.

BY R. B. HOUGH.

I have before me a quaint old volume entitled "Systema Agriculturæ; the Mystery of Husbandry Discovered," etc., by John Worlidge, Gentleman, printed in London in 1687, and in it are several pages devoted to bees and bee-keeping. Thinking the readers of GLEANINGS may be interested in knowing what was being done in these lines 220 years ago I will make a few extracts from it for your columns; and, as illustrative of the antiquated diction, use of capital letters, etc., I will quote them just as I find them, excepting as regards the obsolete forms of letters, which your compositors would hardly be prepared to duplicate. The author states that "There is no Creature to be kept about our Rural Seat, that affords unto us so much variety of pleasure as the *Bee;*" and in speaking of the nature of bees, "Idleness is so detestible a Vice amongst them, that they will not admit of it, nor tolerate it in any (save their sovereign), but every one is continually busied either abroad in collecting their Food, or at home in building Combs, feeding their Young, or some other employment." They have "no single property in anything they do or get; for whatever they gather, all have a part; if any be injured the other will revenge his wrongs, although to the loss of their lives. Their labour is not compulsive, every one acting his part voluntarily, and seemingly contend and endeavour to outvie each other in their nimble and expeditious Voyages, where they so mightily lade themselves, that many times their decayed Wings are not able to support them home." "There can be nothing kept more advantagious than an *Apiary*, according to the Stock or sum you lay out. Many a Countryman hath raised a sufficient Livelyhood only from these laborious Creatures: We need produce no Precedent for it; it is so usual, *Virgil* also seems to hint as much, where he saith:

I saw an old Corycian, who enjoy'd
Few Acres, not for Pastorage employ'd;
Nor was it for Corn or Vineyard found;
Yet were his Thorns with Silver-Lillies Crowned;
Here you could Vervain and rich Poppy find,
That wealthiest Kings be equall'd in his mind:
To him huge Swarms his Bees first pregnant brought,
And full Combs with Rivers of Honey fraught.

After telling desirable features to be considered in the location of an apiary the author advises to set small trees near by so that the bees "may pitch at swarming time near at home, and not be in danger of being lost for want of a lighting-place."

In speaking of hives the author tells us that those most commonly used were made of wicker-work or straw bound with bramble, but adds that they "may be made of Boards, either of an eight-square form joyned together, or bound with Hoops like a Milking-pail, flat on the top," and "In these Hives of Wood may be made several Glass-windows—not only for your observation of their work which you may with much facility and delight perceive—but that the Bees may have the more light; a principal help and encouragement in their Labours." The windows ought to be provided with shutters, but "leave such always down during the Summer that are from the Sun-wards."

He also mentions "Glassen-Hives" as invented by one William Mew, and quotes the inventor in the following: "The Invention is a fancy that suits with the Nature of that Creature; they are much taken with their Grandeur, and double their Tasks with delight. I took (saith he) Fourteen Quarts out of one of the Transparent Hives, double their quantity of others; they quickly paid me their Charges with their Profit," etc. "They serve only to give me an account of the daily Income, and a Diary of their Negotiations: whereby if I spend (saith he) half an hour after Dinner or Supper, I know what hath been done that day; can show my friends the Queen's Cells, and sometimes her Person, with her Retinue."

The author then recounts several efforts in trying to "intice and inforce Bees without Swarming out of their own Habitations into new Hives," but then as now the bees seemed to have ideas of their own in such matters and he was unsuccessful.

After telling of the premonitory signs of swarming he continues: "When the Swarm is risen, it is the usual custom to play them a fit of Mirth upon a Pan, Kettle, Bason, or some such like Instrument, upon pretence to gather them together, and make them settle; which Custom seems to be very Ancient, as *Virgil* witnesseth;

——Make a shrill Sound,
And beat the Cymbals of the Goddess round.

While he mentions this as the usual custom he has little confidence in the efficacy of noise in making the bees settle.

"When your swarm hath made choice of lighting-place, you shall quickly see them knit together, in form of a Cone, Pine-apple, or Cluster of Grapes. When they are fully setled, and the Cone hath been awhile at the biggest, then Hive them."

"First make choice of a Hive proportionable in bigness to your Swarm, that the Bees may go near to fill it that year; but rather under-Hive a Swarm than over-Hive them."

"Then rub the Hive with sweet Herbs, as Thyme, Savory, Marjoram, Balsam, Fennel, Hysop, Mallows, or Bean-tops, etc., and with a Branch of Hazel, Oak, Willow, or any other of the aforesaid Herbs, but rather of the same Tree whereon the Swarm lighted, wipe the Hive clean, and dip such Sprig or Branch into Meath, or fair Water mixed with a little Honey, or with Milk and Salt, or Salt only, and therewith besprinkle the hive.

"Then having first drank a Cup of Good Beer, and washed your Hands and face therewith, or being otherwise defended, if the Bees hang upon a bough shake them into the Hive, and set the same on a Mantle or cloth on the ground, as is usual; or you may

cut off the bough if it be small, and lay it on the Mantle or cloth, and set the Hive over it, which is the better way."

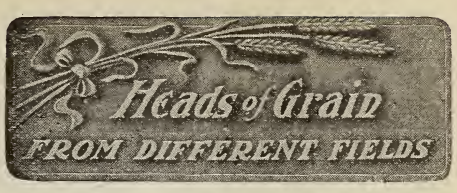
The necessity of the drink of beer becomes more apparent when we consider that the use of smoke for subduing the bees had not yet been thought of, and the odor of one's breath after drinking beer seems to have been effective in driving away the bees. In speaking of the means of defense against bees he says: "In these several ways of dealing with bees, it is good to defend one's self as well as may be against their stinging, which to some persons proves very troublesome, especially if they are uncleanly, or have any ill scent about them; therefore with caution must they be tampered withal. Some only drink a Cup of good Beer, and find that sufficient; others wash their hands and face therewith, which proves a good defence: I have gone amongst them in their greatest Anger and madness, only with a handful of sweet herbs in my hands, fanning about my face, as it were, to obscure and defend it. Also if a Bee do by accident buzz about you, being unprovided, thrust your face amongst a parcel of Boughs or Herbs, and he will desert you. But the most secure way of all, and beyond the completest *Harness* yet published, is to have a Net knit with so small Meshes that a Bee can not pass through, and of fine Thred or Silk, large enough to come over your Hat and to lie down to the Collar of your Doublet, through which you may perfectly see what you do without any danger, also having on a good pair of Gloves, whereof woollen are the best." R. B. HOUGH.

Lowville, N. Y.

[In our opinion the "good beer," so far from preventing stings would, if any thing, have the very opposite effect. We don't know from "experience," but we do know (as admitted by our author) that strange or peculiar odors (peculiar to the bees) sometimes induce stinging. We have no use for beer in any manner or for any purpose, and would not, therefore, indirectly encourage its use in bee culture.

We have many old bee-books, and some of the practices of those olden days are exceedingly ludicrous, judged from our present knowledge and experience. We perhaps will make some extracts from some of these other works.—ED.]

THE reader will have noticed by our last issue that we have begun to quote the honey markets of London, England, and Havre, France. We are establishing connections by which we hope to secure absolutely correct prices at which honey is sold in those markets. We are getting these quotations because it will have a tendency to open an outlet for California and Southern honey in good years when our Eastern markets might all be flooded.



CASE'S METHOD OF CURING FOUL BROOD; A CORRECTION.

In your footnote, March 1, page 321, you say that "The old bees, after being moved, would go back to the old location, *and, not finding their hive, go into some one near by,* thus having a tendency to spread the disease." Now here is just where you make a mistake. If you will read carefully you will find that the bees from the treated colony are on the old stand marked ♀, and that if any bees come back from the stand marked they will find their sisters galore glad ♀ ♀ and ready to welcome them: this *prevents* their going to other stands near by.

I should have said that the hive left on the old stand (the one first indicated), and that contains the swarm, natural or shaken, should be made to look exactly like the one removed, so that all bees returning from instantly recognize it as home. ♀ ♀

W. W. CASE.

Frenchtown, N. J., March 8.

[We accept the correction.—ED.]

HOW A TIMID BEE-KEEPER CLIPPED A QUEEN.

Being somewhat afraid to make my first attempt at clipping a queen I devised the following plan, and succeeded without getting a sting. I wore my regular gloves; but instead of catching the queen in my hand I placed a wire queen-cage over her (a simple wire-cloth box with a wooden slide to go into the open end. She crawled into it at once, and I slipped the cover on and laid down the cage until I had finished moving the brood-frames. Then I stepped away from the hive a short distance, removed my gloves, lifted my veil, and let her run out on my lap, when I held her with one hand and clipped her wings with the other. Then I placed the cage over her and she entered, and I took her to the hive. It was not the queen I was afraid of, but the bees all about her on the brood-frames. I am going to try Mr. Doolittle's method with most of my bees. I saved one colony by Mr. Alexander's method. It had dwindled to a handful, except that my bees had been out of the cellar a month before I learned of it.

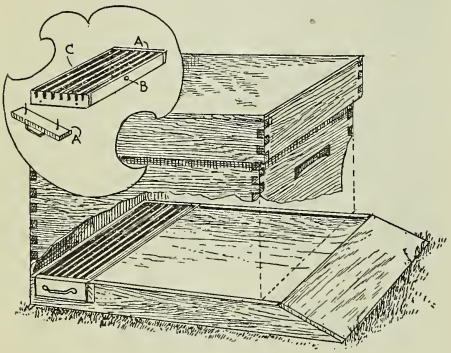
Neenah, Wis. MISS DORA M. HANSEN.

HOW TO MAKE ALEXANDER FEEDERS.

On page 1256 you publish an article by Ira Shockey, of Long, W. Va., illustrating a modified Alexander feeder which he constructed. I don't know any better feeder

than the Alexander. Modifications of the same may be found practicable from some apiarists, but the idea of using a bottom-board feeder is carried out by the Alexander feeder very well. I appreciate Mr. Shockey's principle of using fixtures in bee-keeping, which the apiarist can construct himself without great expense. I follow this principle myself, and have also constructed an Alexander feeder of my own, and used it during the last season with great success. In the following I will show how I made and used it.

In 2×4 planed-lumber pieces of any length I have cut out 4 grooves, ⅜ inch wide and 1¾ inches deep (the planing-mill charged me 2½ cts. per ft. for the lumber and all). From this grooved lumber I cut off pieces the



width of the bottom-board, and close the grooves on the head-sides by nailing on a piece of a ½-inch board. To have a communication between the four grooves I bore with a ½-inch bit a hole across from one side at the bottom of the grooves, and close the hole from the outside with a cork. This feeder I insert in a box, which I attach to the back side of the bottom-board, just large enough so that the feeder can slide in it, and be worked like a drawer. The hive rests with its back side on this box, so that the bees have access to the grooves. When feeding the bees I have simply to pull out the feeder an inch or two, pour in the syrup, and pull back again. This can be done in less than one minute per colony, and robbing can not take place. A. SCHELLING.

Burbank, Cal.

[The plan here spoken of is simple and practical. Instead of boring a hole through one side and plugging with a cork, why not use a short chisel and cut a notch in the center of the grooves. We would advise coating the inside of the feeder with hot beeswax.—ED.]

THE WEST QUEEN-CELL PROTECTOR AS AN INTRODUCING-CAGE; CEMENT HIVE-COVERS.

In the Aug. 15th GLEANINGS N. D. West tells how to use his spiral-spring cage for an introducing-cage. We have used it for such for years, and like it best in some respects. We get the long feed-cups or shells, and grind the bottom off on an emery-wheel and fill the tube with ordinary queen-cage candy —that's all the difference. If the bees liberate their queen too soon, and attack her, the first bee in will be killed, and so on until no more bees can get in, neither can the queen get out. We have had them do this trick a good many times, without doubt saving the queen's life.

A CHEAP UNCAPPING-CAN.

For uncapping-cans we get 50-lb. lard or cotosuet cans, punch the bottom of one full of holes, set it on top of another, and there you are, only 10 cts. each.

Here is a cover we are using, warranted not to rot, warp, nor blow off. It's just cement and sand, 1 to 3, made in a form about ¾ inch thick. Of course, you will protest that they would be heavy. They weigh 16 lbs. for a ten-frame. I am told that they could be made of cinders broken fine as well as sand. I think fine wires or wire cloth might be built in, then they could be made thinner. We have a lot of chaff hives with the outside covered with galvanized iron. I like them, and they are cheap. EUGENE MANNING.

Trumansburg, N. Y.

[Those cement hive-covers may be a good thing. It is possible they could be made thinner by a reinforcing of coarse wire cloth. The new metal lath would be cheaper and better for the purpose. If some one has tested this out, let us hear from him.—ED.]

SWEET CLOVER; WHY IT WON'T GROW ON CULTIVATED GROUND.

I notice, page 1048, the failure which Dr. Miller and A. I. Root had in getting a good stand of sweet clover on cultivated ground. I think I can tell you where they failed.

Sweet clover does not grow on cultivated ground, for two reasons. First, because in such ground the soil is so loose that it freezes out and drowns out. I saw this proven by some cultivated land which had lain idle for three years. The first and second year the sweet clover took hold, but always died out. The third year it wintered fairly well, and will probably do better in 1907.

The second reason is that the original stalk lives two years; hence if it is not allowed to go to seed it will be gone at the end of two years. RAY MCQUISTON.

Independence, Kan.

THE ALEXANDER CURE FOR BLACK BROOD NOT SUCCESSFUL.

I sent you last fall a sample of diseased brood. You pronounced it black brood, which proved true. You wished me to try the Alexander method, and report. This spring half of my bees were affected with the disease, and so were the neighbors' affected. We sent for foul-brood Inspector Strooms, and he said the Alexander method

was a failure because the spores are in the honey, which is true. I gave the Alexander method a thorough trial, and it is a perfect failure. Clean hives and foundation will effect a cure. S. J. SNYDER.

Aurora, N. Y., Sept. 28.

[We are very glad to get this as, the truth is what we want, let it cut where it may. We should be pleased to hear from any others who may have given the plan a trial. One or two reported that they were successful with it. Now let us hear both the unfavorable as well as the favorable reports.—ED.]

DO NOT BIRDS CATCH DRONES PRINCIPALLY?

On page 40 is an article entitled "How to Combat Bee-birds." It has been my lot to presume, through information from various sources, that bee birds catch only drone bees and do not molest those from which a sting would likely result. I have not as yet had either occasion or opportunity to put the matter to a test. Will GLEANINGS either sustain the presumption or correct the mistaken view, if error it be? M. L. R. EDMUNDS.

Brandon, Oregon, Jan. 21, 1907

[While large numbers of drones are caught by the birds, yet there is plenty of evidence to show that *both* bees, and, in a few instances, queens are taken. An examination of their crops after the birds were shot have shown the crushed forms of drones and worker bees. In some instances stings have been found in the inner walls of the crop. In some cases the birds, especially the king-birds, catch their victim by the waist or thorax, crush it to death, and then swallow. We have seen this act repeatedly, and the deftness with which a king-bird will catch a bee on the wing is enough to command wonder and admiration; but the admiration at least changes to revenge until the shot-gun puts an end to the "sport." —ED.]

THE STRENGTH OF AN ALFALFA FLOW; THE EFFECT OF CLIMATIC CONDITIONS.

I wish to respond to your request in regard to honey in alfalfa. Nine years ago I placed a strong colony on my scales, and the result was from 1 to 7 lbs. per day, or an average of about 1¾ lbs. per day. Two different days during the summer it was cloudy and sultry, the first day only 96 in the shade; that night the scale hive registered 6½ lbs. A few days later, another sultry day, and the scale hive registered 7 lbs., convincing the writer that climatic conditions regulate the flow of nectar to a great extent. Living, as you know, where there are miles of alfalfa, it is very seldom that I got even enough alfalfa to whiten the combs from the first cutting, which is usually very heavy. We usually get our best yield from the third cutting. Much depends on the amount of water. If plenty of water for irrigating, the apiarist is sure to be disappointed—that is, if he thinks he is to get a large crop. The short stunted alfalfa is the kind that produces most nectar. When the climatic conditions with a moderate use of water are right it would be very hard to overstock an alfalfa-range. WM. LOSSING.

Phœnix, Arizona.

[Mr. Lossing is one of the most extensive bee-keepers in Arizona. The editor remembers well the very pleasant visit he spent in his place some years ago. His whole family at the time of our visit, including his two daughters, were helping him in the garden. These girls he said were equal to any two men.—ED.]

CARNIOLAN AND CAUCASIAN BEES—DIFFERENCES BETWEEN.

There is more or less confusion between the Carniolans and Caucasians. Will you give me, as definitely as possible, a description of each breed? C. G. CHEVALIER.

Baltimore, Md., Dec. 31, 1906.

[Nothing has been published as yet that goes into an exact differentiation between Carniolans and Caucasians, so far as we know. As a matter of fact, the two races are very similar in characteristics and general markings. The Carniolans, probably, are slightly less gentle, a trifle larger, and in general color of a bluish cast rather than of a brownish black as are the Caucasians. This latter race is quite inclined to chink large wads of propolis in the hive and between the frames at certain seasons of the year, while the Carniolans are almost entirely free from it. Caucasians, again, are not much better than black bees in repelling moth-worms, while the Carniolans, on the other hand, seem to be the equal of Italians in warding off the pest. In other points the two races are very much alike, and the average person, probably, would not see much difference between them.—ED.]

ANOTHER USE FOR THE BAILEY HIVE-LIFTER.

In your issue of Sept. 1, 1906, appears an article from me regarding the hive-lifting device I use to such good advantage in my apiary; but I did not mention how handy it was in placing bees in their winter clamps on summer stands.

I simply place the lifter over the hive and raise it sufficiently high to admit a clamp. Then I gently lower the hive into place. One man performs the operation easily, and bees are not disturbed in the least. I then place a block on each side of the hive-entrance and lay a piece of board on blocks sufficiently wide to fill the space between the hive and the clamp, thus forming a passage for bees to go out and in if required. Pack the space between the hive and clamp tightly with dry forest-leaves, and cover up for winter, the space between the hive and clamp being about 4 inches. I have found this plan very satisfactory, and, when done properly, bees will winter better than being inside, JOHN BAILEY.

Bracebridge, Ont., Dec. 31, 1906.

Go to the ant, thou sluggard; consider her ways, and be wise.—PROV. 6:6.

I think we might learn many valuable lessons from the lower forms of animal life if we would take the pains to study them and get intimately acquainted with their habits and ways. The text I have chosen is not exactly what I wanted; but it comes so near it I think it will do very well. If we should take out the word "ant" and substitute "chickens" then it would fit exactly.

One of the valuable lessons I have learned is contentment and thankfulness—yes, enthusiasm—with just such an environment as God has seen fit to give us. A chicken when only two days old begins to be happy and enjoy himself. He is delighted with any sort of surroundings; and when he gets up in the morning he says by his actions, as he flops his little wings, "Hurrah, boys! now for some more fun! We are going to have another *whole day* to run about and find things, and *grow*." I told you about one of them that was determined to have me for a mother, and would always be between my feet, etc. Well, he pestered me so much when I was busy that I used to "dump" him into a little pen hardly a yard square that held young chicks just from the incubator. This, of course, didn't suit; but when he found "what couldn't be cured must be endured" he "got busy" teaching the new chicks how to drink, scratch, etc. He had run with the hen just long enough to get an idea of how she managed; and when he found he could not have a mother himself he decided, apparently, to be "little mother" to the baby chicks, and straightway began making believe he was their "natural born mother." I laughed and laughed at his antics. When it came night he tried to cover some of them with his diminutive wings, and mimicked very well the mother's quieting "cr-r-r-r," which means, "Now be quiet, all of you, and go to sleep like good chil—chickens."

When they were all old enough to go out I almost laughed until I cried to witness his assumed dignity as he led and instructed his flock. I *almost* cried from different emotions when his flock, all but one, died in the coal-oil "epidemic." He is alone now, and a sight of him rejoices my heart while I write; but if you should get a glimpse of him (only half feathered out) you might conclude, as Mrs. Root often says, that it doesn't take *very much* to make *me* rejoice. Now for our lesson No. 1.

Is there any reason, friends, why *we* should not rejoice when we get up *every morning* at the life God has set before us? Is there any reason why *we* should not move with alacrity and take up with joy and enthusiasm—yes, and *thanks to God*, doing over again the very same things we did yesterday?

Yes, I know something about it, for in Mrs. Root's absence this winter I have been caring for our cottage here on the island. After I had been here a week or two I wrote our youngest daughter (recently married) that I was getting tired of so much sweeping the house, dusting, making the bed, etc. But afterward, in thinking it over, I remembered I had been very happy about my "housework," after all. We don't have any mud here; but the sand and broken shells have a fashion of clinging to one's feet, so that, unless you are careful, there will be an unpleasant crunching as you set your feet down on the floor; and to avoid this we have burlap sacks tacked on all the doorsteps. If you wipe off your feet well on these door-mats you will carry very little "grit" into the house: but these door-mats need to be swept off several times a day. To keep a broom in good order it should never be set with the broom end on the floor. Our way is to flatten the top of the broom-handle, then with a sharp bit bore a ⅝ hole so the broom can easily be hung on a nail.

Well, with every thing convenient and handy I have learned to *love* my household tasks. Not only every morning but several times a day I get the broom and make the house look neat, just as Mrs. Root would have it; and when I sweep I always whistle. Why, I have done more whistling this winter than in all the time since fifty years ago, when I was a boy. Yes, I do get homesick sometimes—not so much for that other *home*, but for a sight of Mrs. Root. Well, when I get homesick, I breathe that little prayer, "Create in me a clean heart, O God," etc., and then I get the broom, move the bed, all the chairs, and (home-made) furniture, and do a good job of housecleaning; and before I get through I get to whistling "Listen to the Mocking-bird," with impromptu variations. Why, two or three times I have been so astonished at my progress in learning to whistle that I actually wished I had a phonograph to catch the notes. I can't reproduce it when I get home. I might find some *sweeping* to do, but I never *could* whistle as I have been whistling here this winter, unless I was homesick. Dear brothers (of course, I don't know to whom I am talking), did *you* ever find consolation by whistling when off alone, and thinking of "the girl I left behind me"? I am getting a little away from my text, but there is something more to be said just here. It *does* take a good deal of time to keep a house looking tidy, and I told Carrie I was looking forward to the time when I should have some one to do it for me; but wait a bit; is it *really certain* I shall be *happier* or as happy when I am relieved? Shall I be able to keep on whistling with that boyish abandon? May God help us all to recognize that the very things we are, in our shortsightedness, considering *drudgery*, may be the very *essentials* to

our happiness and enjoyment of life? Now we come to lesson No. 2.

We can not very well whistle and sing (and do a *good* job at it) unless we are in good health. The chicken doesn't flop its wings and make its legs spin, and cut up all sorts of antics, to show how it enjoys life, unless it is robust and strong. If chilled, or even if its toes are cold, that wonderful buoyancy of spirits is gone. My reading for the past winter has been largely in regard to poultry. I have read the poultry papers, and studied the incubator catalogs, and I have been impressed with the fact that the best authorities are beginning to agree that dry uncooked food is best for chickens, young and old. A year ago I said the best medicine in the world for chickens was "a pocketful of wheat;" and later I said I might almost have added, for human beings as well as for poultry. A year or two ago much was said in print about "mashes" for fowls —hot mashes or wet up cold. Now all are being dropped, or mostly so. Give them, young and old, dry grains with plenty of water to drink, and many if not most of the diseases will be averted. If I am right, cooked food for all farm stock is pretty much abandoned. Very well in theory, but not in average practice. Now think of Terry's teachings—grains and nuts *uncooked*. Can't we get some lessons in health from chickens? I don't like to disagree with Terry, and may be I shall not very much. Let us see.

Several years ago my neighbor Hilbert, of Traverse City, Mich., hatched a lot of chickens with an incubator. He sent word he had something to show me. When his chickens were a week or two old they kept chirping for something; but as they had plenty of grain and water he couldn't make out what the trouble was until he got them out on some rich ground and spaded up some angleworms. At the sight of them there was almost a panic. It was the "long-felt want." I told you about it in GLEANINGS. A hen with a dozen or more finds insects, etc.; but incubator chickens without a hen are a different proposition. Ours were in the same fix. When I began to chop up one of the coons I told you about, my chickens, little and big, were almost crazy. They chased each other round and round the yard as if gone wild, for just a morsel of animal food. I gave them all they wanted. *Then* they were satisfied and happy. My brood of 30 went and sat in a row on a crooked tree, perfect pictures of contentment and satisfied appetites—something I had never seen them do before. Since then, every time I give them all the animal food they crave they go and sit in a row on that very log. Fresh fish or ground bones from the meat market will produce the same result. I have recently purchased a Mann bone-cutter, and with it came a little book, "Worms and Bugs." The book is an advertisement of the bone-cutter, of course; but for all that I think it is boiled-down common sense, and it is about the cutest advertising circular I ever got hold of. The book doesn't say it, nor even hint it, but *I* say that the same reasoning will, I think, apply to *humanity* the world over. Thousands of people are not happy, not thanking God and enjoying life, just because they do not have for daily food a "*balanced ration.*" The great reason why they don't "sit on a log in a row," contented, happy, and thankful, like the chickens, is because — not because, dear reader, they don't have "angleworms," or even "coons," but because they don't have enough animal food in some form to make a "balanced ration." Here is where Terry and I *may* not see things alike. He has, it is true, said but little in favor of animal food, but he may have no objection to milk and eggs.

I have no quarrel with those who hesitate to take animal life for food, for I confess I should very much dislike to use my pet "biddies" for food, even if they were too old to be profitable layers; but I *do* think eggs and milk are among God's greatest gifts to mankind. Now that we have fowls giving us over 200 eggs a year, why shouldn't we use eggs for *medicine*, if we can't afford them in any other light? What you pay for drugs and doctors would buy a good lot of eggs.

In Cleveland, O., they have a sanitarium for consumptives, and I have been told they have much success, and that their patients are on a diet largely of eggs. Here is a clipping from *Poultry Success* for February, 1907:

> An Indiana man claims to have eaten more than 2000 eggs within a year to ward off consumption. He says he is well now. This may look like a big story, but we know of one woman, threatened with consumption, or having the disease, as some doctors claimed, who ate six raw eggs a day. She was very weak and thin at first, but after a time gained flesh, color came back to her cheeks, and she is now pronounced entirely cured. This is eating eggs with a vengeance, and, of course, might not be beneficial in all cases. The one who sent in this item says she can not eat even two eggs without distress, yet suggests it might help others. Of one thing I am certain, however, and that is, we should most of us consume more than we do, instead of buying so largely of the butcher.

I have eaten more eggs during the past winter than ever before in my life in the same time, and my health has been remarkable. When I am on "grains, fruit, and nuts," I need about one egg at each meal to make a balanced ration.

Now, grains and meat alone do not make a complete balanced ration for poultry. The need of green stuff of some kind is almost as great as that for meat. Here in Florida, if it is not provided, the chickens will destroy every living thing. This is especially the case when fowls are confined. In my yard are some small papaya-trees (the tree that bears "muskmelons"). Well, my White Leghorn rooster was springing up and pulling the leaves from trees about as high as my head. In fact, I had to protect the trees with some old rusty stove-pipe or there would not have been a leaf left. Now I give them sea kale that grows in the salty sand along the Gulf. When I bring up an armful there is animation and rejoicing among all the poultry, little and big. This

plant has a pungency something like mustard, and doubtless is liked by the fowls on that account; the leaves are thick and succulent, something like cabbage, and a single thirfty plant makes quite an armful. Hot weather and lack of rain (like the present season) have no effect on it, for it is watered by the briny spray of the great ocean.

My "Florida flying-machines" are now roosting in the tall cedar-trees just in front of our door—not all of them, however, for only a few have learned to fly so high. Every night at sundown there is a "contest" that I seem to enjoy as much as any of them. The most skillful and muscular flyers look down from their lofty perch and watch the repeated trials of the others. The flapping (or, rather, flipping) of their newly "created" wings is music in my ears, and the planning and calculating they resort to to get up among their fellows is amusing.

Last night a lot of them, that had apparently given up, hopped from the workbench to the top of the woodshed door, which had been left open temporarily, and from there to the roof, and then by the aid of their wings they reached the ridge-pole of the house, from which it was "clear sailing" to their comrades in the cedars. This makes it just about nine weeks from the egg to the tree-tops. When in the tree-tops, although in one sense "*in* the woods," they are, so far as care of the owner is concerned, "*out* of the woods." A little grain where they can have access to it, and they care for themselves until ready for market, or to go to laying—no houses to clean out and fuss with—at least in this climate. In lesson No. 1 I spoke of learning from the chickens an example of being happy with the environment God has given us; in No. 2 of the necessity of providing for these bodies of ours proper nourishing food in the way of a balanced ration; lesson No. 3 in regard to our spiritual needs in order that we may be as happy, satisfied, and contented as the row of chickens resting on the log. We will introduce by quoting Matt. 10: 29, 30, 31.

Are not two sparrows sold for a farthing? and one of them shall not fall on the ground without your Father. But the very hairs of your head are all numbered. Fear ye not, therefore; ye are of more value than many sparrows.

Well, I have been *very* happy this afternoon, dear friends, in singing an old hymn that I learned from brother Shumard. I give just the words, but you can probably find the music in some of your books. As you sing it, or even read it over, study carefully until you get the full meaning of every line and every sentence.

I am dwelling on the mountain,
Where the golden sunlight gleams
O'er a land whose wondrous beauty
Far exceeds my fondest dreams;
Where the air is pure ethereal,
Laden with the breath of flowers,
They are blooming by the fountain,
'Neath the amaranthine bowers.

I can see far down the mountain,
Where I wandered weary years,
Often hindered in my journey
By the ghosts of doubts and fears;
Broken vows and disappointments
Thickly sprinkled all the way,
But the Spirit led unerring
To the land I hold to-day.

I am drinking at the fountain,
Where I ever would abide;
For I've tasted life's sweet river,
And my soul is satisfied;
There's no thirsting for life's pleasures
Nor adorning rich and gay,
For I've found a richer treasure,
One that fadeth not away.

Chorus:—Is this not the land of Beulah,
Blessed, blessed land of light,
Where the flowers bloom for ever,
And the sun is always bright?

Dear reader, do skepticism and infidelity offer any thing to be compared with the sentiment in the above lines? Just think of it, "For I have found a richer treasure, one that fadeth not away."

It has been our pleasure to entertain to-day one of the veteran bee-keepers and his wife, Mr. L. Brewer,* of Philo, Ills., and we all sang together the above hymn, and I think all agreed with the sentiment of the beautiful words, "Heaven and earth shall pass away, but my words shall not pass away."

I came not to send peace on earth, but a sword.—MATT. 10:34.

"FIGHTING MOTHERS."

I find I have something more to say on this subject. My first pullet that wanted to sit was given 18 eggs. I knew one of Mr. Shumard's hens that stole her nest brought home 18 chickens, and why should not *my* hen, at the same time of year, in this locality, also have at least 18 eggs? Well, the other hens laid two eggs more in the nest; one was found unfertile, and my pullet brought out yesterday 18 strong chickens. I *hope* there are incubators that do as well, but I am afraid not. Well, this pullet, as you may remember, is one-fourth Brazilian game. For the first 24 hours I put her in a small enclosure of inch-mesh poultry-netting; but she got so excited when other older chicks came near (stepping on *her* chicks, etc.), that this morning I turned her loose. In a little while some of the older chickens came near. The day before, I kept a little switch handy to drive them away when I was giving the "new arrivals" their "baby chick-food." Well, as soon as one of the half-grown ones came this morning within about a rod of her chicks she made a dive for him and had him by the nape of the neck, shaking him aloft in the air until I came to his rescue. The day before, while she was penned, I had tried in vain to make him stay away. After the shaking *she* gave him, however, he "made for the timber," and I haven't had a glimpse of him since. Friends, this is a "chicken story," but there is a moral to it. Yesterday's daily told of a miscreant who went into a town making picture sketches. He picked out good-looking girls of 12 or 14, and on pretense of wanting to sketch them he got them into his "studio." When a raid was made on the place, three girls—children—were found *unconscious* from the effects of drugged whisky. Well, I should like to see the mothers of these girls take that fellow as the game hen took that chicken, and either

*On pages 1125 and 1126 of GLEANINGS for Sept. 1, last year, you will find pictures of Mr. Brewer, with a sketch.

shake the life out of him or scare him so bad he would remember ever more that the girls, even in our rural districts, have not only *mothers*, but, when needed, mothers who can *fight*. A little later she took another chick (that seemed a little too inquisitive) by the leg and swung him about until I came to interfere. A third she took by the *wing*, and before noon the whole poultry-yard "had notice served on them" that she proposed to shed her last drop of blood in fighting for and protecting those 18 helpless little bits of downy feathers. She proclaimed herself by her actions a "fighting mother," and she and her chickens are now "boss of the island." While I write they are making a handsome picture, spread out before my door, some of them asleep in the bright sunshine, while she the mother (bear in mind, the *fighting mother*) is also sitting down a little distance away, taking her ease. She can do so safely, for she has, in just one short forenoon, taught all the rest the penalty, not only of harming a "feather" of those 18, but even of coming near with meddlesome and inquisitive looks.

A spell ago a young girl in New Jersey was drugged and carried off, and never recovered. She had no father, no big brothers, and her mother was a poor widow who did washing. Some *married men, respectably connected*, were sent to prison for the crime, it is true; but after they had been there a year or two a petition was circulated to have them pardoned on the ground they "didn't mean to" *kill* the girl. I don't know whether our land afforded "fighting mothers" enough to "kill" that petition or not; but I hope so—mothers who are ready to fight like my game pullet, not only for their girls but for their *boys* as well as girls; mothers who will give the whole world to understand that their boys and girls *belong* to *them*; mothers who will put up such a fight that saloonkeepers and all the criminal horde that lurk in the darkness of their dens will back off and out of sight *because* of the fighting mothers. Do you know why the hypocritical lies that were sown broadcast by the so-called "army generals" in favor of the "canteen restoration" had so little effect on the public mind? Because the world is just beginning to learn something of the temper of the *fighting mothers* of America. May God be praised that it is my privilege to do a little in clearing the way for these "mothers," and in backing them up when the time comes, when "fighting *fathers*" are also needed. The wolves that try to prey on our children are cowards—wolves are *always* cowards. When they once find out that there is "game blood" in our veins—yes, even the blood and the *spirit* of Him who said, "I came not to send peace on earth, but a sword," *then* we can take up our peaceful employments while our children go unharmed about their plays, even as these tender little chickens now bask safely in the sunshine unprotected, *because* the mother has already proclaimed she is ready to die without flinching in defense of the innocent and helpless ones that God in his mercy has entrusted to her care.

As I now write, an effort is being made to permit the women of Ohio to have a voice in saying whether saloons may or may not have a foothold in the vicinity of our Ohio homes. Shall the "Spartan" mothers of Ohio be permitted to fight for their children and their homes as my game pullet is, even at this very moment, chasing *clear out of sight* any that she thinks might be unduly *familiar* with her innocent and unsuspecting little flock?

CONSCIENCE NOT AN INFORMATION-BUREAU.

If conscience is a safe guide to what is right and wrong, then the Bible is not needed. There is no half-way ground here, for a guide that needs guidance is no guide at all. And as a matter of fact, conscience is *not* a guide; and because so many souls mistakenly think it is, confused and wandering errors in the pathway of life are constantly made. Conscience is a *monitor*. It prompts and prods; it urges "*Do* what you know to be right: do *not* do what you know to be wrong." But it does not instruct us in what is right and what is wrong; it is not a bureau of information. That instruction we receive from God in many different ways, of which the Bible and the training of parents and teachers are some. Therefore it will not do to settle back in the easy assurance that we have a safe guide in conscience. We have a tremendous responsibility to learn, from sources outside of ourselves, what is our duty, and those sources are always available when we really seek them.

The above from the *Sunday School Times* contains a grand truth that many learn only after sad experience. I wish it might be copied far and wide.—A. I. R.

PAULOWNIA IMPERIALIS; MORE ABOUT IT.

I clip the following from *Park's Floral Magazine*:

I have a full-grown paulownia in my yard, about 35 or 40 feet high. It has in May the most beautiful large branches of purple flowers ever seen. The bunch is composed of 25 or 30 flowers, lavender purple, with creamy to orange throats, and the odor from them is the most delightful I ever smelt. It is the odor of violets, but 100 per cent stronger; and as the flowers drop from time to time, the grass beneath is sprinkled thickly with them, and the atmosphere for a radius of at least 100 feet each way is permeated with the odor of violets. You can raise them from seeds. The buds form in the fall. They are covered with a thick, velvety-brown covering or husk that drops in the spring, then come the flowers. I can go the editor one better in the size of leaves. A sucker sprang from this tree a couple of years ago, and, of course, it received the most nourishment; besides, we sprinkled it plentifully with the hose. It was a sight. It grew in one season 10 feet high, with leaves 26 inches across. I have three other small ones on my place. I think they are gorgeous in the fall. I had a man dig and cut a portion of the root to which this sucker was attached, and plant it elsewhere, and it is a fine tree now.

Riverside, Ohio, July 10, 1906. MRS. R. WINTER.

Our readers may remember that ours grew *more* than ten feet last season, and some of the leaves more than *a yard* across. Both seeds and plants can be had of Geo. W. Park, LaPark, Pa.

FOR selling oleomargarine for butter, a St. Louis dealer was a short time ago sentenced to pay a fine of $1400 and also to undergo one month's imprisonment by a federal judge. This ought to prove a warning to some that Uncle Sam will enforce the pure-food law to the limit.

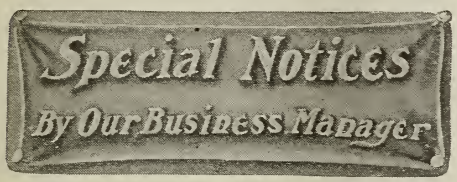
Convention Notices.

The North Texas Bee-keepers' Association will hold its annual meeting at Ladonia, Texas, on the first Wednesday and Thursday in April. All bee-keepers are invited to attend. No hotel bills to pay.

W. H. WHITE, Sec.

The Northern Michigan Bee-keepers' Association will hold its next annual convention at East Jordan, Mich., Wednesday and Thursday, April 10 and 11. Special rates secured at the Russell House, of $1.00 per day. IRA D. BARTLETT, Sec.

The annual meeting of the Connecticut Bee-keepers' Association will be held in the State Capitol, Hartford, room 50, April 6, 1907. Interest in bee culture has been given an impetus through the recent effort to secure good foul-brood legislation, and this meeting will not only give every bee-keeper in the State an opportunity to increase his knowledge of bees and their diseases, but an interesting program has been prepared touching many other important phases of the science of apiculture. A cordial invitation is extended to both ladies and gentlemen. Please bring choice samples of honey, or any thing of an apiarian nature, for the honey exhibit. J. ARTHUR SMITH, Sec'y.
Hartford, Ct.



IMPROVED BINGHAM KNIFE.

After waiting a year we have finally secured a supply of the improved Bingham knife with flanged shank, and are now filling orders. For some time we were obliged to send orders forward without these knives. Any who have been disappointed in this way can now get all they want.

POWER EXTRACTORS.

There is a lively interest in many quarters in the power-driven extractors. We received orders for four engines with large extractors in a period of one week, all from California. One man puts an engine between two large extractors on a low-wheel wagon, driving both extractors with the same engine. He can easily move his rig from one apiary to another.

METAL SPACER FOR HOFFMAN FRAME.

A patent has been allowed on this device, which was issued March 5th. It broadly covers all devices of a similar nature, though differing in design from the one we make. We shall be pleased to hear from any who have tested this spacer to a considerable extent the past season, as to how it compares in use with other frames with different means for spacing. From the limited trial in our own yards we believe it to be a valuable device.

SECOND-HAND FOUNDATION-MILLS.

We have the following second-hand comb-foundation mills to offer. We give a brief description of each, and shall be pleased to mail a sample of foundation, representing any one or more of these mills, to those interested, on application:

No. 077, 2x10-inch round-cell brood mill in old-style high frame, in good condition. Price 12.00.

No. 082, 2½x10 medium-brood mill, round cell, late-style frame, in good condition. Price $15.00.

No. 083 2½x10 medium-brood hex. mill, late-style frame, in good condition. Price $16.00.

No. 084 2x10 medium-brood round-cell mill, old-style frame, in fair condition. Price $11.00.

No. 075, 2x9 hex. brood mill in the oldest-style wood-base frame. Original price of this machine was $80.00. We offer it for $10.00.

BUSINESS OUTLOOK.

Carload orders from our jobbing agents are crowding us much more than they were at this time last year, and our shipments so far this year are somewhat ahead of last year, same date. The outlook in many directions is quite promising, and a hopeful spirit prevails. The supply of choice honey, both comb and extracted, especially the latter, is pretty well sold up, and what is available is bringing good prices The price of lumber and other materials continues to stiffen, and many things are sold so far ahead that it is almost impossible to get deliveries for months to come. There seems to be little prospect of a let-up in this respect.

ALUMINUM-COATED SMOKER.

The greatly increased price of brass and copper made it necessary to make an advance of 50 cents for a copper smoker over the price of a tin one of same size. Our attention has been called to a new metal which is rust-proof, and does not blacken by being overheated. It is aluminum-coated steel. We secured some of it to test for bee-smokers, and are now prepared to offer Jumbo and standard Root smokers made of this metal, to those who wish to try them, at an advance of 15 cts. each on the standard, 25 cts. on the Jumbo. This makes the standard cost $1.00 with other goods, or $1.25 by mail; the Jumbo at $1.50 with other goods, or $1.80 by mail. We should be glad to have these tested by those living in the vicinity of salt air, where tin smokers are subject to rust, and report how they stand in comparison with tin and copper.

SWEET-CLOVER SEED.

We still have a good stock of unhulled white-sweet-clover seed here and in Chicago, the price of which is 22 cts. per lb. by mail, postpaid; not prepaid, 12 cts. per lb.; 10 lbs., $1.00; 100 lbs., $8.00. We have here at Medina a limited quantity of hulled white at 8 cents a pound advance over the unhulled. We are sold out of the yellow variety entirely, and hardly expect to have any more of this to offer till the new crop is gathered. If any of our readers know of any seed of the yellow variety available we should be pleased to get the information.

Mr. W. T. Davidson, of Indiana, who had an article regarding the value of sweet clover, in a recent issue of GLEANINGS, wishes us to say to our readers that he has no seed for sale, but that he is selling hives and other bee-fixtures.